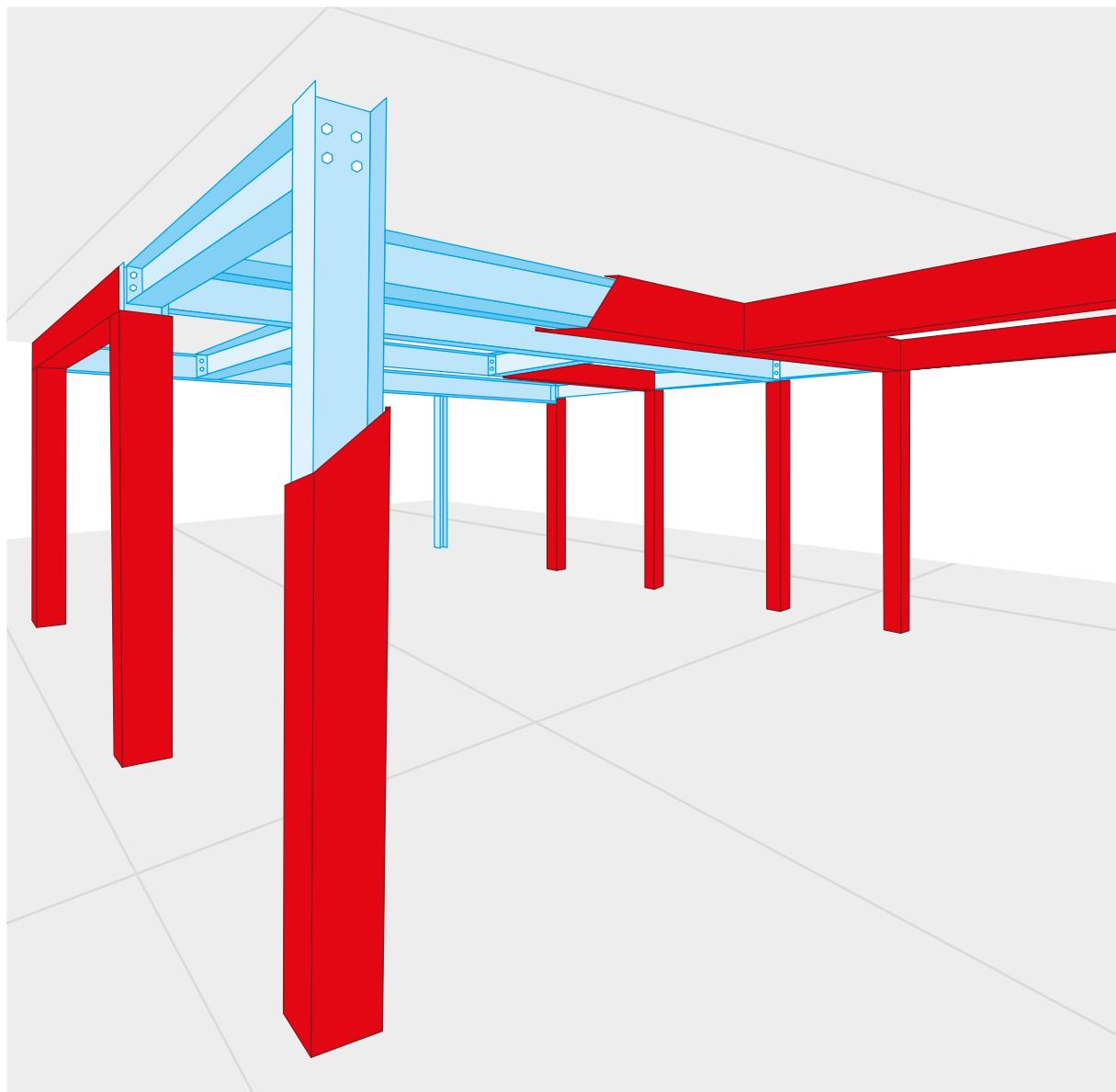


## VERMICULUX®-S

Providing fire protection to structural steel for up to 240 minutes



AN A1 NON-COMBUSTIBLE CALCIUM SILICATE BOARD



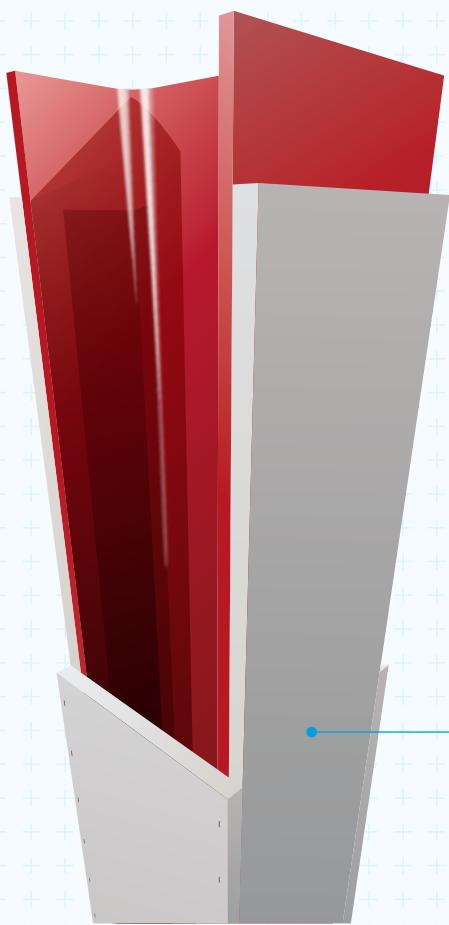


Promat manufacturing plant, Tisselt.

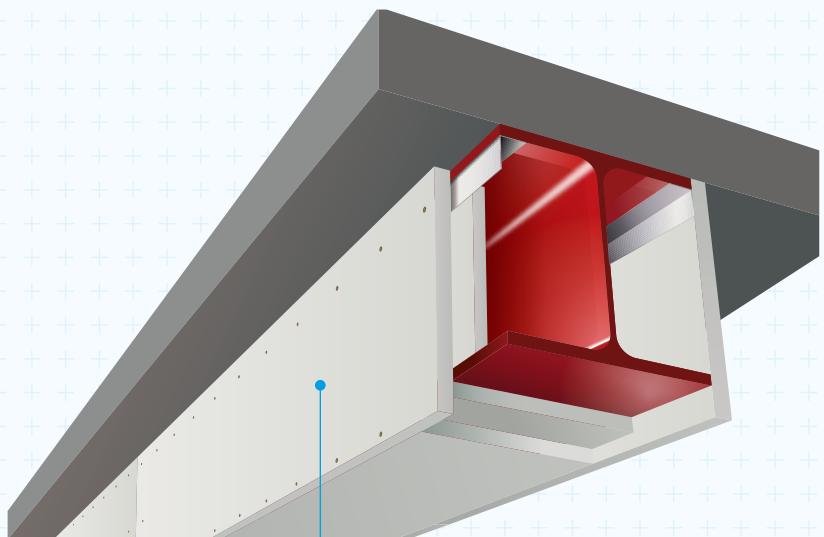
**VERMICULUX®-S** is an A1 non-combustible calcium silicate board which provides 30 minutes to 240 minutes fire protection to structural steel.

VERMICULUX®-S has permanent dimensional stability, so in the event of a fire it reduces the speed at which the steelwork will heat up, allowing it to maintain its loadbearing capacity for longer.

## Column Encasements



## Beam Encasements



**VERMICULUX®-S**

UP TO 240 MINUTES  
FIRE PROTECTION



MOISTURE  
RESISTANT

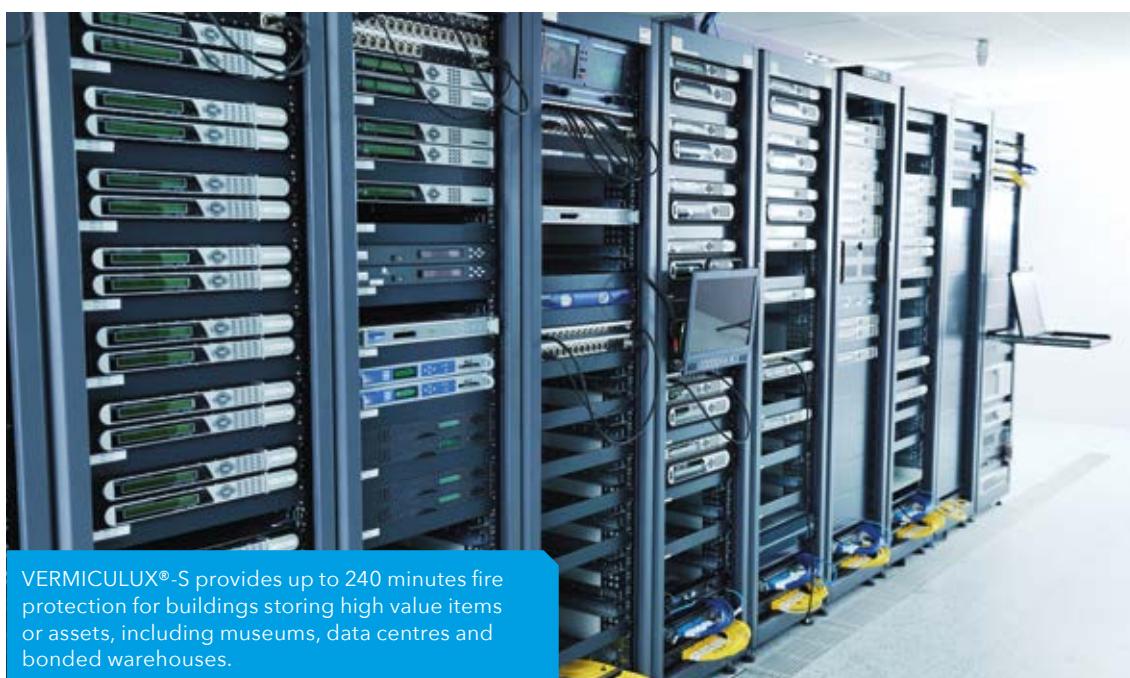
# PRODUCT OVERVIEW

**VERMICULUX®-S** is used to provide one, two, three or four sided encasements to:

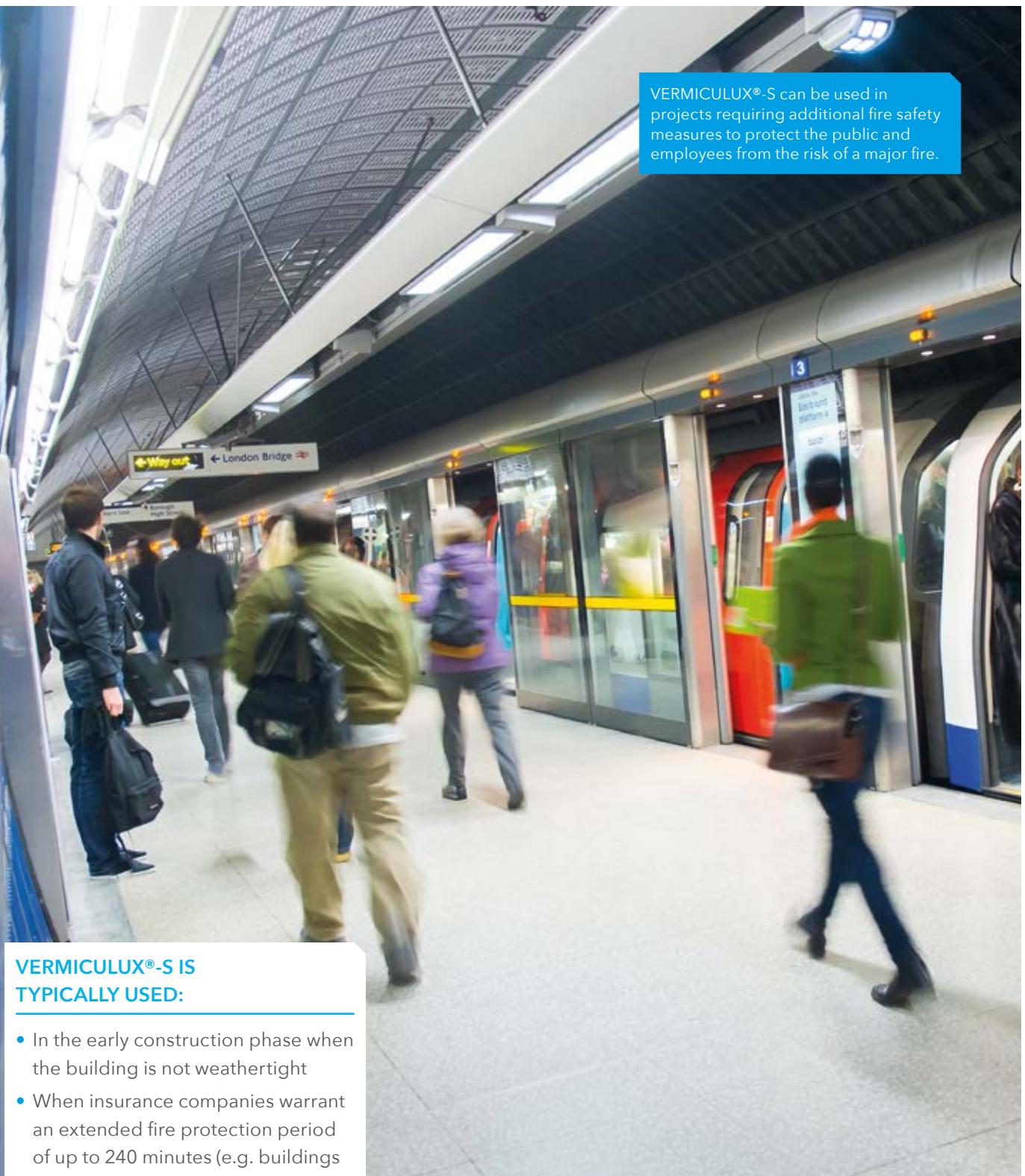
- Universal columns and beams (I or H sections), joists and RSJs
- Structural hollow sections
- Bracing
- Lattice beams
- Partially exposed members
- Perimeter beams
- Beams supporting composite floors with profiled metal decking
- Wind posts.



In contrast to paints or sprays which are weather dependent, VERMICULUX®-S can be installed before the building is weathertight.



VERMICULUX®-S provides up to 240 minutes fire protection for buildings storing high value items or assets, including museums, data centres and bonded warehouses.



VERMICULUX®-S can be used in projects requiring additional fire safety measures to protect the public and employees from the risk of a major fire.

#### VERMICULUX®-S IS TYPICALLY USED:

- In the early construction phase when the building is not weathertight
- When insurance companies warrant an extended fire protection period of up to 240 minutes (e.g. buildings storing high value items or assets)
- Where additional fire safety measures are required for high risk areas, such as boiler or plant rooms, transport infrastructure and power stations.

# DESIGN BENEFITS

## Fully Tested and Certified

Since the Grenfell tragedy, the performance of building materials is under an unprecedented spotlight. Specifiers can be confident of the provenance of VERMICULUX®-S and that it is tested and fit for purpose because the product is:

- Manufactured by the Etex Group under ISO9001 and ISO14001 conditions and is thus fully traceable
- Independently tested and certified by Warringtonfire (certificate no WF 407855)
- Also tested as part of a whole system to assess its interaction with other building components.

### THIRD PARTY CERTIFICATION



VERMICULUX®-S has been independently assessed by Warringtonfire (No WF 407855).

### 'REAL LIFE' TESTING



Promat products are tested as part of a whole system, not just as a product, to assess their interaction with other building components.

### RAW MATERIALS



All of the raw materials used by the Etex Group have been responsibly sourced from its trusted suppliers.

### MANUFACTURE



Manufactured within the Etex Group under ISO9001 and ISO14001 conditions.

### FULLY TRACEABLE



Unlike many other calcium silicate boards, our products and processes are fully traceable.





VERMICULUX®-S is a lightweight board, 9.6-24kg/m<sup>2</sup> and is factory manufactured to a guaranteed thickness.

# DESIGN BENEFITS

VERMICULUX®-S is used where the fire protection system is in full view and where it is hidden.

It offers the specifier a clean, boxed appearance and can be applied on unpainted steelwork. It is available in a range of thicknesses and can be used in a single or double layer, according to requirements. It is often a thinner solution in comparison with other fire-resistant constructions.

It can also accept a decorative finish and therefore be used where aesthetics are important.



## FIRE RESISTANT

A1 non-combustible according to BS EN 13501-1.



## MOISTURE RESISTANT

Can be installed before the building is weather tight.



## MOULD RESISTANT

Resistant to the effects of moisture.



## COMPREHENSIVELY STRONG

Galvanised steel partition sections can be installed directly up to the face of the board.



## FLEXIBLE

VERMICULUX®-S is often a thinner solution in comparison to other fire-resistant constructions.



## DURABLE

It will not degrade by age and has good impact strength.



## EASY TO DECORATE

With a smooth, decorative finish.

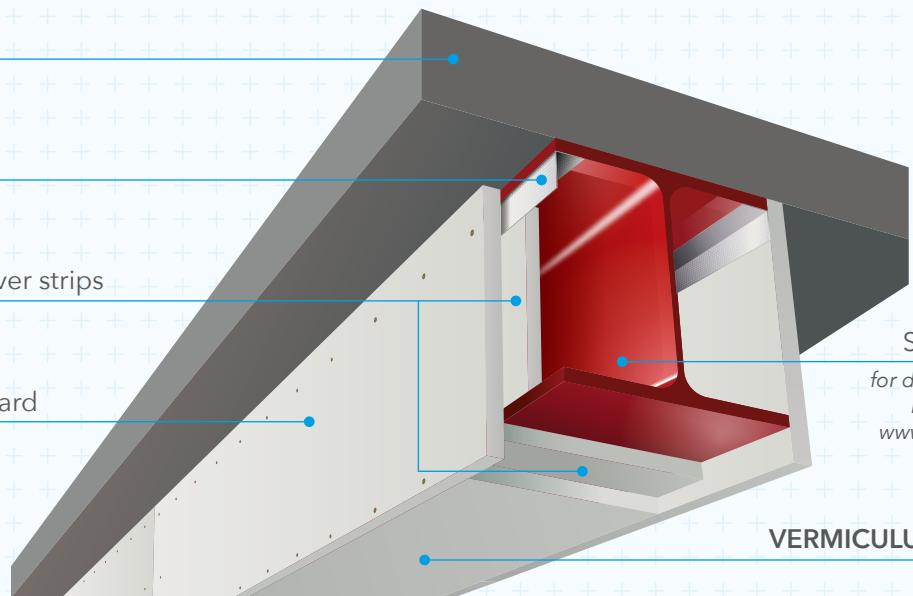
## A thin solution for structural steel protection

Concrete structure

GTEC Metal Angle

VERMICULUX®-S cover strips

VERMICULUX®-S board



Steel section  
for detail of 3 sided  
installation visit  
[www.promat.co.uk](http://www.promat.co.uk)

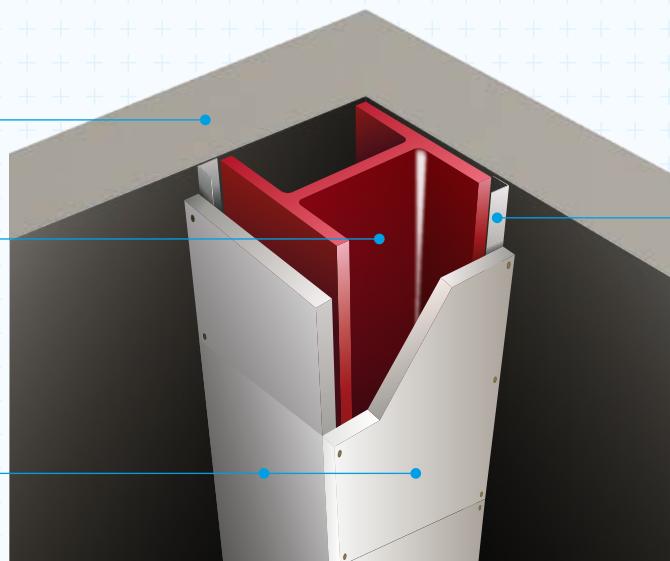
VERMICULUX®-S board

Concrete structure

Steel section

for detail of 2 sided  
installation visit  
[www.promat.co.uk](http://www.promat.co.uk)

VERMICULUX®-S board



GTEC Metal Angle

# SPECIFYING VERMICULUX®-S

The board is specified in terms of the thickness required to achieve the limiting temperature for a particular section factor of the steel.

## THIS DEPENDS ON FOUR FACTORS

1

Period of fire resistance specified

2

The section factor of the steel (A/V)\*

3

The limiting temperature for the steel

4

Whether the steel section is a beam or a column

As advised by the structural engineer or structural steel manufacturer.

## A/V RATIO FOR COLUMN AND BEAM ENCASEMENTS

\*The section factor of the steel is based on the size of the steel and the number of sides exposed to the fire. The A/V ratios for steel sizes can be manually calculated or shown in Chapter 3 of the Promat Passive Fire Protection Handbook (or the ASFP Yellow Book).



In the table (right), we have illustrated the A/V ratios for a limiting steel temperature of 550°C.

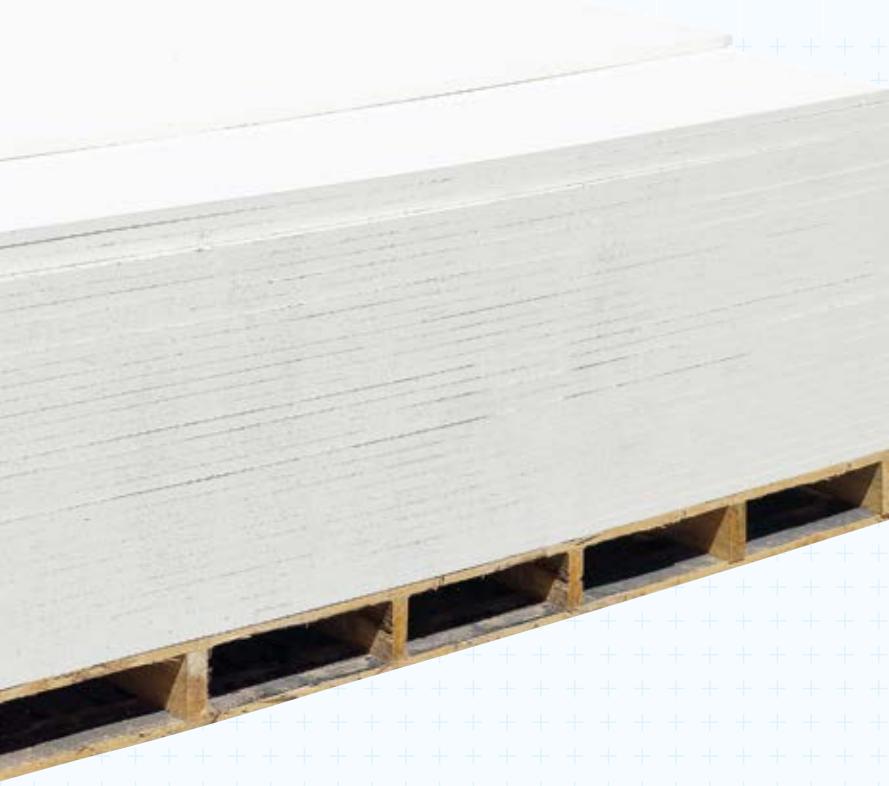
VERMICULUX®-S is fully tested at limiting temperatures from 350°C to 750°C; please see Promat website for more details.

## A/V Ratio for Column and Beam Encasements

### LIMITING STEEL TEMPERATURE

SECTION FACTOR A/V - m-1	Fire Resistance Period (minutes)						Board Thickness	
	30	60	90	120	180	240	Single Layer	Double Layer
550°C	275	275	150	100	60	–	20mm	
			210	125	70	–	25mm	
			275	165	75	50	30mm	
			235	90	55		35mm	
			275	110	60	40mm	20mm + 20mm	
				140	70	–	20mm + 25mm	
				195	80	50mm	25mm + 25mm	
				275	95	–	25mm + 30mm	
					120	–	30mm + 30mm	
					160	–	30mm + 35mm	
					245	–	35mm + 35mm	
					275	–	35mm + 40mm	

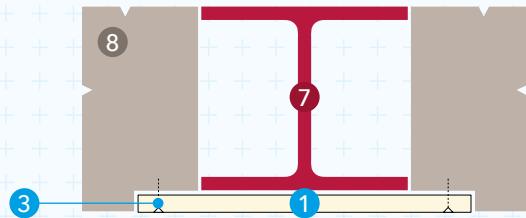
VISIT  
[www.promat.co.uk/en/  
vermiculux-s](http://www.promat.co.uk/en/vermiculux-s) for other  
A/V ratio tables for a wide  
range of limiting steel  
temperatures.



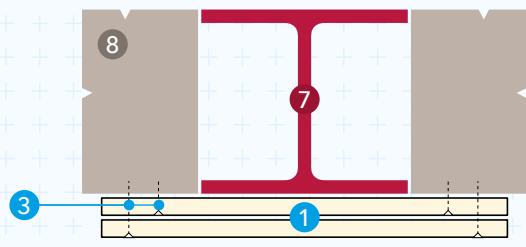
# DESIGN GUIDE

The following diagrams provide guidance on the most common construction details.

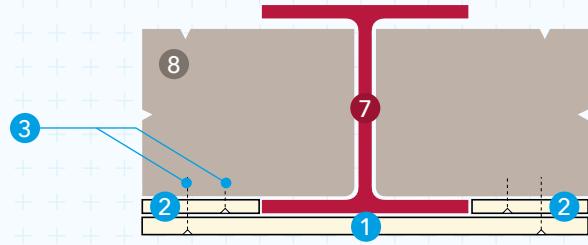
1-sided encasement to columns  
(one layer).



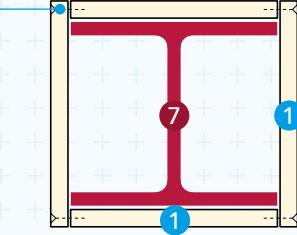
1-sided encasement to columns  
(two layers).



1-sided encasement to columns  
(one layer).



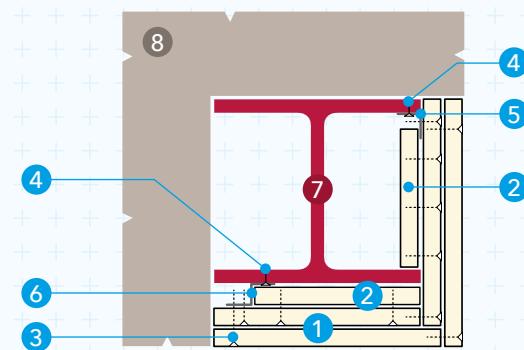
4-sided box encasement to columns  
(one layer).



VISIT  
[www.promat.co.uk/  
 en/vermiculux-s](http://www.promat.co.uk/en/vermiculux-s) for  
 more construction  
 details.

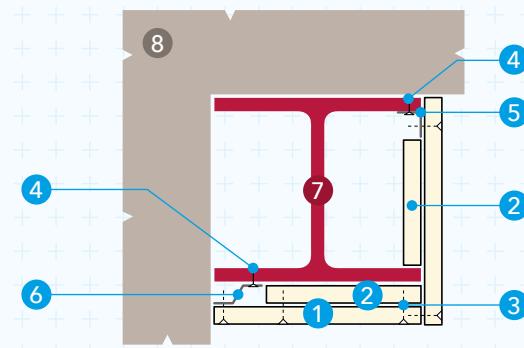
#### 2-sided encasement to columns or beams (two layers).

*NOTE: Columns do not require internal cover strips behind flange panel joints.*

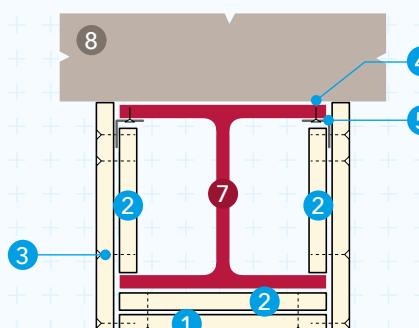


#### 2-sided encasement to columns or beams (single layer).

*NOTE: Columns do not require internal cover strips behind flange panel joints.*



#### 3-sided box encasement to beam (one layer).



- ① VERMICULUX®-S board
- ② VERMICULUX®-S cover strips (120mm wide)
- ③ M4 GTEC High Thread screws

- ④ M4 GTEC Wafer Head self drilling screw or shot-fire nails
- ⑤ GTEC Metal Angle 90°
- ⑥ Zed angle

- ⑦ Steel section
- ⑧ Concrete structure

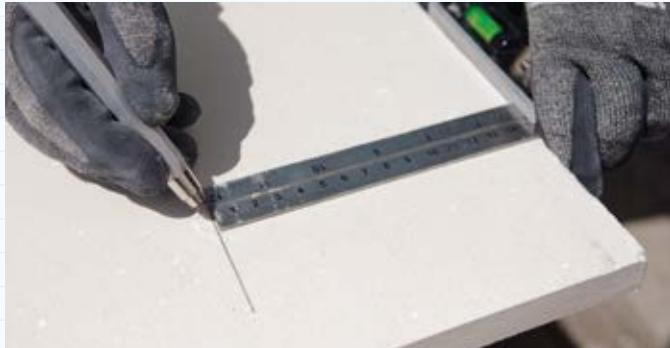
# STEP BY STEP GUIDE

## Fire Protection for Column Encasements (showing 4-sided encasement)

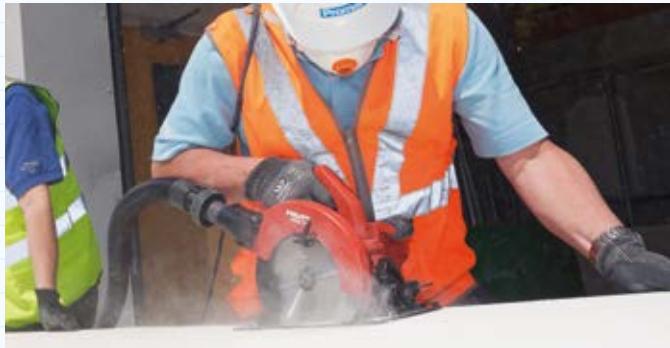
- 1 **Measure for Flange Panel** – Measure the flange of the structural steel column plus 3-4mm.



- 2 **Mark up Flange Panel** – Mark up VERMICULUX®-S board to fit flange plus 3-4mm.



- 3 **Cut Flange Panel** – Cut boards using a hand saw with hardened teeth or a power circular saw in conjunction with tungsten carbide tipped blades, or a jigsaw. All cutting should be carried out in well ventilated spaces, using dust extractors. Operators should wear protective face masks.  
Please see product safety information sheet for further guidance.



- 4 **Column to Beam Junction** – Mark up, cut and fit boards around junctions by butt jointing the square edges of VERMICULUX®-S.



- 5 Measure for Web Panel** – Measure the web of structural steel column plus the thickness of the VERMICULUX®-S flange panel. (20, 25, 30, 35, 40 or 50mm).

*Note: Stagger joints on adjacent faces by at least 500mm.*



- 6 Mark up Web Panel** – Mark up and cut VERMICULUX®-S board to the dimensions in step 5. (*measure twice, cut once!*)



- 7 Fixing Web Panel to Flange Panel** – Fix web panels to flange panels using GTEC High Thread screws.

All GTEC High Thread screws should be fixed at least 12mm from the edge and 40mm from the corners. Soldiers are optional for a 4 sided column encasement. Adding soldiers will improve the stability of the casing. If required, a filler may be used to finish joints before decoration.

Adhesives are not required. Care should be taken not to overtighten screws. For best results when using screws, use a variable speed electric screw driver with a torque control.

*Note: Stagger joints on adjacent faces by at least 500mm.*



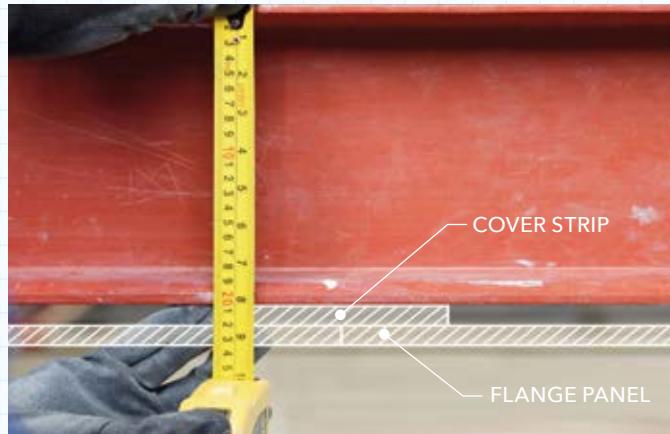
# STEP BY STEP GUIDE

## Fire Protection for Beam Encasements (showing 3-sided encasement)

- 1 **Fixing Steel Angle** – Fix 50mm x 25mm x 0.7mm GTEC Metal Angle 90° to the underside of the top flange of the structural steel beam, using 3.7mm x 16mm shot-fire nails or GTEC Wafer Head Self Drilling screws at 300mm centres.



- 2 **Measure for Web Panel** – Measure depth between the soffit and the bottom edge of the flange, including the thickness of the VERMICULUX®-S cover strip and flange panel.

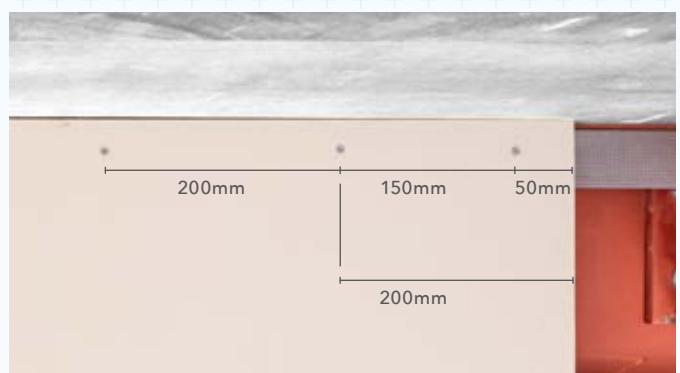


- 3 Measure Web Panel** - Measure, mark up and cut VERMICULUX®-S boards to the dimensions in step 2, plus an additional 3-4mm.



- 4 Fixing Web Panel** - Fix web panels to steel angle using GTEC High Thread screws spaced at 200mm centres. Screws should be approximately half way down the angle.

First fixing 50mm from board edge, second fixing, 200mm from board edge and then at 200mm centres.



## Fire Protection for Beam Encasements (continued)

- 5 **Placing Soldier Strip** - Install 120mm wide soldier strips behind the web panel joints. These should extend up behind the angle and are fixed with GTEC High Thread screws at maximum 200mm centres.



- 6 **Flange Panel and Cover Strip** - Measure, mark up and cut flange panel to fit between web panels, remember to pre-fix 120mm wide cover strip.  
*(measure twice, cut once!)*



- 7 **Fixing Flange Panel** - Screw flange panels into position through the face of web panels at 200mm centres.

Fixings should be a minimum 20mm and maximum 50mm from each end of flange panel.

There is no need to stagger joints between faces.



# FINISHING

## Plastering and Painting

### PLASTERING

All calcium silicate boards have a high suction and therefore it is generally difficult to apply gypsum plaster.

**Plastering boards:** If a skim coat is desired, apply a sealing coat of diluted universal primer/PVA (e.g. 1 part PVA and 5 parts water). Sealing coat should be allowed to dry thoroughly (approximately 24 hours). Apply bonding coat (3 parts PVA and 1 part water).

Apply plaster skim (5mm thick) while the bonding coat is wet and tacky.

It is recommended that a small test area is plastered initially to ensure that the boards have been adequately sealed. It is advisable that self-adhesive or hessian scrim is applied over joints and internal angles. Paper scrim is not recommended.

The plaster manufacturers' recommendations should be followed at all times.

### PAINTING

Promat boards have an attractive, smooth finish but if required they can be painted with emulsion or water based paints. With water based paints, a diluted first coat should be used.

All coatings should be supplied by a reputable manufacturer and their recommendations regarding surface preparation, sealing and finish coat should be followed at all times.

---

**NOTE:** For tiling and other specialist coatings, please contact Promat Technical Services Department.





# TECHNICAL CHARACTERISTICS

## Typical Mechanical Properties

Flexural strength	Average, dry	N/mm <sup>2</sup>	≥ 1.7
Tensile strength (parallel)	Average, dry	N/mm <sup>2</sup>	0.44
Compressive strength	Average, dry	N/mm <sup>2</sup>	4.2

## General Technical Data

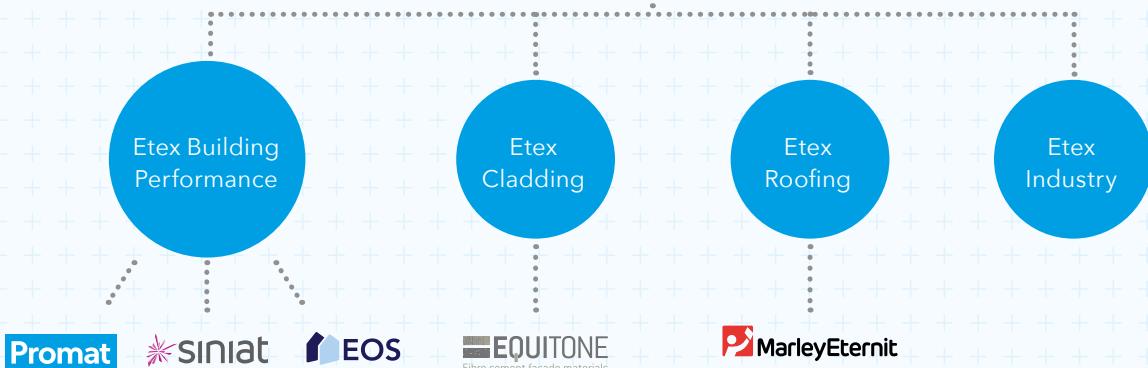
Designation	Calcium Silicate
Material Class	Non-combustible
Surface Spread of Flame	Class 1
Building Regulations Classification	Class 0
Nominal Dry Density (Average) kg/m <sup>3</sup>	480
Alkalinity (Approx) pH	9
Thermal Conductivity (Approx.) at 20°C W/mK	0.09
Coefficient of Expansion (25-105°C) m/mK	7.0 X 10 <sup>-6</sup>
Nominal Moisture Content (Ambient) %	3.5
Moisture Movement (Ambient To Saturated) %	≤ 0.15
Thickness Tolerance of Standard Boards (mm)	± 0.5
Length x Width Tolerance of Standard Boards (mm)	± 3.0
Surface Condition	Front Face
	Back Face

## VERMICULUX®-S Board Sizes

Product Code	Length x Width (mm)	Thickness (mm)	Edge	Approx Weight (Dry, kg/m <sup>2</sup> )	Approx Weight (5% Moisture, kg/m <sup>2</sup> )
158379	2500 x 1200	20	Square	9.6	10.0
158381	2500 x 1200	25	Square	12.0	12.5
158382	2500 x 1200	30	Square	14.4	15.0
158383	2500 x 1200	35	Square	16.8	17.5
158384	2500 x 1200	40	Square	19.2	20.0
158385	2500 x 1200	50	Square	24.0	25.0

# INTRODUCING ETEX BUILDING PERFORMANCE

Promat is part of Etex Building Performance, which combines the products and solutions of three prominent dry construction materials companies: Promat, Siniat and EOS Façades.



## Promat

Promat is a specialist in passive fire protection and high performance insulation.



Siniat is a manufacturer of plasterboard and other drylining products. It makes systems for partitions, ceilings, wall linings and external sheathing purposes.



## EOS

EOS Façades specialise in the design, manufacture, and supply of a wide range of steel solutions for the Steel Framing Systems (SFS) and off-site markets.



## TECHNICAL SERVICES

For technical support and advice.

T: 0800 145 6033

E: [technical.promat@etexbp.co.uk](mailto:technical.promat@etexbp.co.uk)

## **Etex Building Performance Limited**

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