



# WEATHER DEFENCE

The revolutionary external sheathing board

Brochure includes information on:

- Meeting fire safety, including over 18m height
- Eliminating breather membranes
- Creating an airtight layer





Recent Siniat Weather Defence project:  
Eastern High School, Rumney, Cardiff

Sector: **Education**  
Project value: **£26m**  
Architect: **Powell Dobson Architects**  
Contractor: **Willmott Dixon**  
Sub-contractor: **M&P Contractors**

For more details on how to curve Weather Defence turn to page 26

# PRODUCT OVERVIEW

Weather Defence is an award-winning external sheathing board which has transformed building envelope construction and performance.

**Weather Defence has been specified by over 45% of AJ100 British Architects**

Allies Morrison, BDP, Scott Brownrigg and Sheppard Robson were amongst the early adopters of Weather Defence.

The design benefits it brings include:

- It is Euroclass A1, fully non-combustible so is suitable for structures above 18m in height
- It has two BBA certificates
- It achieves outstanding airtightness
- It is easy to cut, shape and bend, offering more options for design detailing
- Responsibly sourced and eligible for credits under BREEAM.

**Weather Defence has been installed by over 75% of the Construction News' top 25 main contractors**

BAM Construction, Bouygues, Carillion, Galliard Homes, Graham Construction, Interserve, Kier and Willmott Dixon regularly specify Weather Defence because:

- It is 50% quicker to install than cement particle board
- It makes the building watertight for internal trades
- It is 30% lighter than cement boards, making it easy to lift and move around site
- Simply score and snap, no need for specialist cutting equipment or segregated areas
- It helps reduce site noise and dust emissions
- Can eliminate the need for a breather membrane helping to reduce project costs.

The new 2nd Generation Weather Defence Board has an improved formula and allows the board to be installed and exposed on frame for twelve months during construction, providing more flexibility to the project timeline.

# DESIGN BENEFITS

## An innovative, lightweight technology

External sheathing options have evolved. Weather Defence is a fully non-combustible Euroclass A1 rated sheathing board and confirmed by BRE as a suitable alternative to cement particle board in external systems, tested or assessed against BS8414-2 or BR 135.

Weather Defence is also a lightweight board which can easily create corners or striking curves, offering more options for design detailing.

Since its launch in 2013 it has been voted **Product Innovation of the Year** at the British Construction Industry Awards.

It's time to rethink your choice of external sheathing material.



## Weather Defence is designed to be installed on:

- Light steel infill and oversail systems on concrete and steel frame buildings
- Modular buildings
- Light gauge steel frame buildings
- Timber Frame Buildings

Weather Defence for exceptional airtightness in coastal locations



Swansea Bay Campus, Swansea

Weather Defence for striking designs



Wales & West Housing Office, Deeside

## Suitable for most façades

Weather Defence has two BBA Certificates. One as a sheathing board for use behind a variety of rainscreen types and as part of an insulated render façade system.

“...a really simple product that could very quickly become the major player in the market.”

BCIA Judging Panel

Brick Cladding



University of Salford

Stone Cladding



Swansea University

Timber Rainscreen



Typical Timber Façade

Metal



Typical Metal Façade

Rainscreen Panels



Ice Arena, Wales

Insulated Render



North Somerset Enterprise and Technology College

## DESIGN BENEFITS

**Sustainability: it's sustainable, traceable and recyclable**

**Weather Defence:**

- Is manufactured by Siniat in Europe
- Has a fully recyclable core
- Contributes towards credits under BREEAM
- CE marked to EN 15283-1.

Most cement particle boards are not recyclable. They are typically made by a third party manufacturer in the Far East and imported into the UK, sometimes without the required CE marking and Declaration of Performance.



University of Salford – Student Accommodation



“Siniat are looking to be innovative and we as an industry are looking at all manner of innovations that assist in cutting down waste and simplifying the process. Siniat have been very good at that on this particular project and we’ve embraced that.”

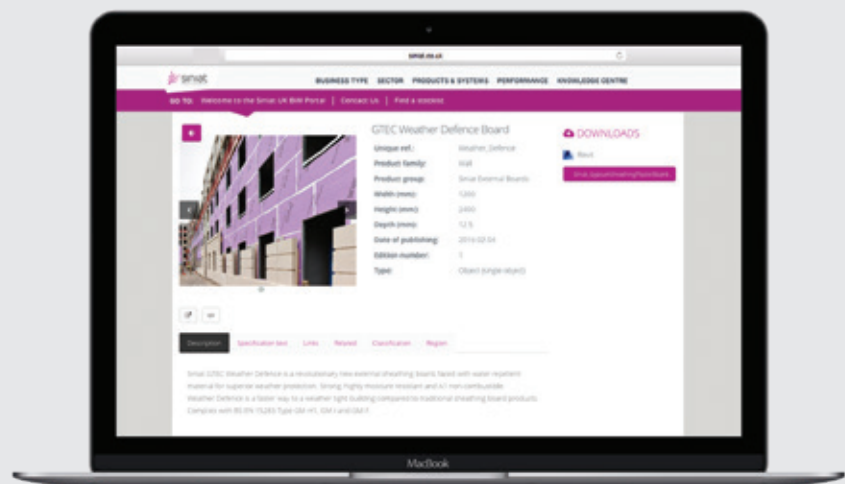
Vernon Hailwood, Design Manager,  
Graham Construction (University of Salford Project)

## BIM Objects

We have a full suite of BIM objects to help designers and contractors comply with Level 2, including a dedicated Weather Defence object – with a substantial amount of information included for you, to incorporate into your next BIM project.



Visit [www.siniat.co.uk/en/knowledge-centre/bim](http://www.siniat.co.uk/en/knowledge-centre/bim)



## Bespoke Detailing

If you would like us to do the detail for you, our Technical Support team are Weather Defence experts and are happy to help.



0800 145 6033



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



# SYSTEM PERFORMANCE

Gypsum technology is at the heart of Weather Defence's system performance; its unique characteristics offer excellent fire performance, airtightness and high sound insulation whatever framing system is used.

A guaranteed system performance, warrantied for 30 years\*, is possible when using Etex Building Performance Thruwall® Systems — A collaboration in rigorous testing and development with our colleagues at EOS Façades.



### Acoustic performance

Our Thruwall® Systems have been acoustically tested according to ISO 10140-2 (Laboratory measurement of sound insulation of building elements – Part 2: Measurement of airborne sound insulation) and can provide sound insulation up to 50 R<sub>W</sub> dB (45 R<sub>W</sub> + C<sub>tr</sub> dB) depending on the system chosen.



### Weathering

Weather Defence has undergone extensive weathering tests in our purpose-built laboratory. Boards are tested to ensure that they retain their mechanical stability and resist mould growth even when exposed to the elements for extended periods during the construction phase.

Weather Defence can be left exposed on site for up to 12 months.

Whilst it is highly resistant to water, the board is also open to vapour, allowing the building to breathe and release potentially damaging moisture trapped within the Thruwall®.

These qualities mean that, in many cases, there is no need to install a breather membrane over the sheathing board; saving both time and cost.



### Thermal performance

Systems shown are based on minimal insulation to achieve fire and acoustic performances. Additional insulation can be installed within the frame or external to the frame/board to improve U-values, in most cases without detriment to fire or acoustic performance.



### Fire performance

Our Thruwall® Systems have been fire tested according to BS EN1364-1 (non-loadbearing) in both directions and can provide fire resistance (EI) from 60 to 120 minutes depending on the system chosen. Weather Defence not only provides high levels of fire resistance it is also rated at Euroclass A1 non-combustible, so is suitable for buildings with a height of more than 18 metres.

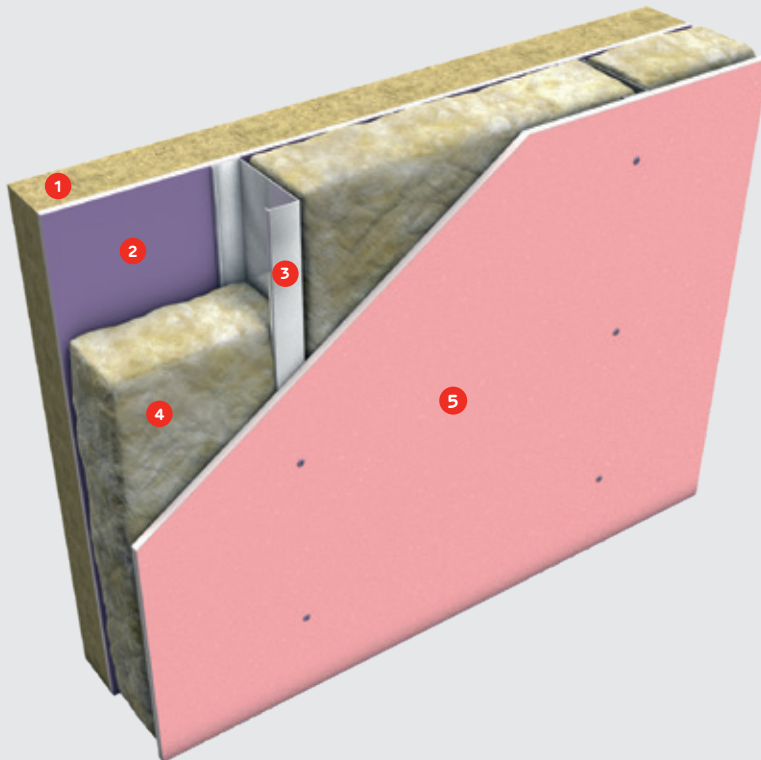
*\*30-year warranty is available following a specification and a validation process, please contact us for further details and for terms and conditions. System components may not be substituted.*



## OUR THRUWALL® SYSTEMS

### ETW 112: Weather Defence Sheathing, single layer internally – 60 minutes fire

60 minute Thruwall® solution for medium-rise construction



- 1 External insulation:**  
100mm rock mineral wool  
(0.035 W/mK)
- 2 Sheathing:**  
1x 12.5mm Weather Defence
- 3 Framing:**  
EOS light steel infill framing
- 4 Cavity insulation:**  
Full-fill glass mineral wool  
(0.035 W/mK)
- 5 Internal boards:\***  
1x 15mm Fire Board  
(for standard applications)  
**System reference:** ETW 112F  
or, 1x 15mm Megadeco  
(for faster decoration and  
impact-resistance)  
**System reference:** ETW 112M  
or, 1x 15mm Aqua Board  
(for wet areas)  
**System reference:** ETW 112A  
or, 1x 15mm LaDura  
(for impact and durability)  
**System reference:** ETW 112L

Technical info	
<b>Fire Resistance:</b> to EN 1364-1 (non-loadbearing)	EI 60 mins (inside to out) EI 60 mins (outside to in)
<b>Reaction to Fire:</b> to EN 13501-2	All components – at least A2 Limited Combustibility Weather Defence sheathing – A1 Non-Combustible Glass mineral wool – A1 Non-Combustible
<b>Sound Insulation:</b> to ISO 10140-2	45 R <sub>w</sub> dB or 40 R <sub>w</sub> + C <sub>tr</sub> dB
<b>Height/strength:</b> to EN 1993-1-1	Varies by wind and cladding loading
<b>U-value:</b> to BR443 and BRE465 (Excluding cladding and fixing correction)	Varies by framing specification, indicative values below: 0.20 W/m <sup>2</sup> K      Studs 100x1.2 @ 600mm centres 0.24 W/m <sup>2</sup> K      Studs 100x1.6 @ 300mm centres 0.18 W/m <sup>2</sup> K      Studs 150x1.2 @ 600mm centres 0.23 W/m <sup>2</sup> K      Studs 150x1.6 @ 300mm centres

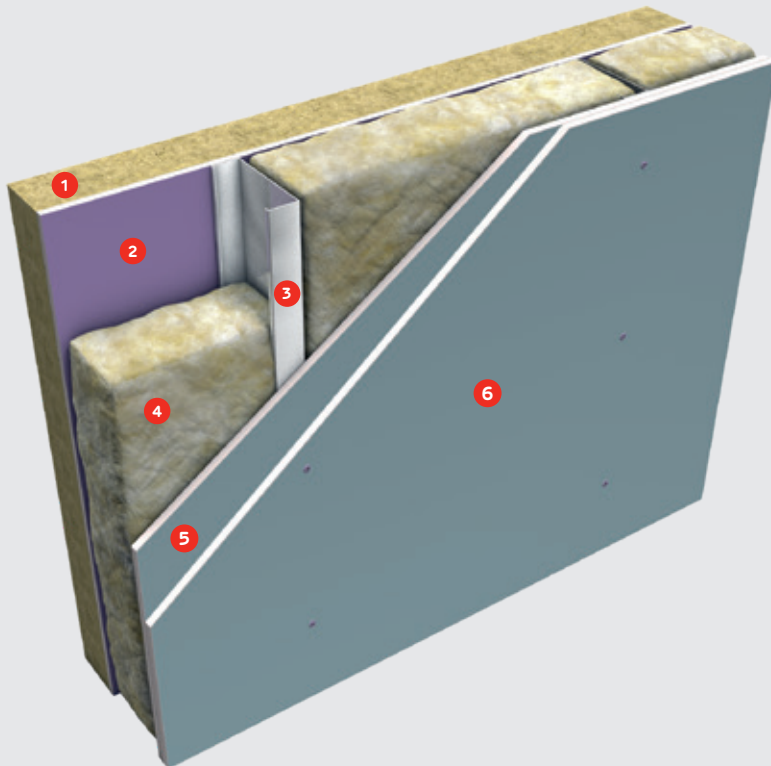
\*Laminated vapour control layers are available where required by condensation risk analysis.

Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

## OUR THRUWALL® SYSTEMS

### ETW 113: Weather Defence Sheathing, double layer internally – 60 minutes fire

60 minute Thruwall® solution for medium-rise construction



- 1 External insulation:**  
100mm rock mineral wool  
(0.035 W/mK)
- 2 Sheathing:**  
1x 12.5mm Weather Defence
- 3 Framing:**  
EOS light steel infill framing
- 4 Cavity insulation:**  
Full-fill rock or glass mineral wool  
(0.035 W/mK)
- 5 Internal boards (inner):\***  
1x 12.5mm dB board
- 6 Internal boards (outer):\***  
1x 12.5mm dB Board  
(for standard applications)  
**System reference:** ETW 113D  
or, 1x 12.5mm Megadeco  
(for faster decoration and  
impact-resistance)  
**System reference:** ETW 113M  
or, 1x 12.5mm Aqua Board  
(for wet areas)  
**System reference:** ETW 113A  
or, 1x 12.5mm LaDura  
(for impact and durability)  
**System reference:** ETW 113L

#### Technical info

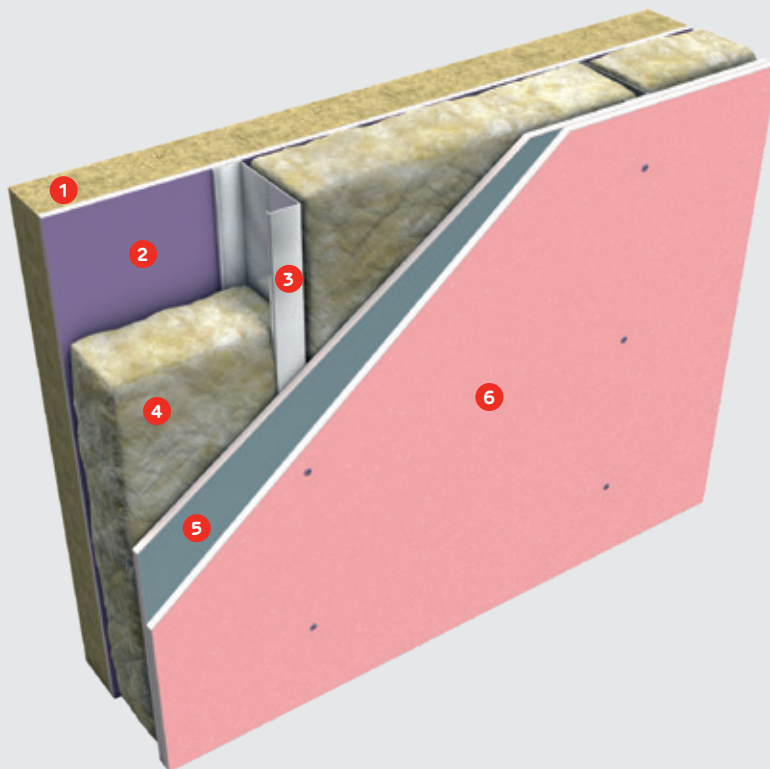
<b>Fire Resistance:</b> to EN 1364-1 (non-loadbearing)	EI 60 mins (inside to out) EI 90 mins (outside to in)
<b>Reaction to Fire:</b> to EN 13501-2	All components – at least A2 Limited Combustibility Weather Defence sheathing – A1 Non-Combustible Rock or glass mineral wool – A1 Non-Combustible
<b>Sound Insulation:</b> to ISO 10140-2	48 R <sub>W</sub> dB or 43 R <sub>W</sub> + C <sub>tr</sub> dB
<b>Height/strength:</b> to EN 1993-1-1	Varies by wind and cladding loading
<b>U-value:</b> to BR443 and BRE465 (Excluding cladding and fixing correction)	Varies by framing specification, indicative values below: 0.19 W/m <sup>2</sup> K    Studs 100x1.2 @ 600mm centres 0.23 W/m <sup>2</sup> K    Studs 100x1.6 @ 300mm centres 0.17 W/m <sup>2</sup> K    Studs 150x1.2 @ 600mm centres 0.22 W/m <sup>2</sup> K    Studs 150x1.6 @ 300mm centres

\*Laminated vapour control layers are available where required by condensation risk analysis.

Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

## ETW 114: Weather Defence Sheathing, double layer internally – 90 minutes fire

90 minute Thruwall® System, for taller buildings



- 1 External insulation:**  
100mm rock mineral wool (0.035 W/mK)
- 2 Sheathing:**  
1x 12.5mm Weather Defence
- 3 Framing:**  
EOS light steel infill framing
- 4 Cavity insulation:**  
Full-fill rock or glass mineral wool (0.035 W/mK)
- 5 Internal boards (inner):\***  
1x 15mm dB board
- 6 Internal boards (outer):\***  
1x 15mm Fire Board (for standard applications)  
**System reference:** ETW 114F  
or, 1x 15mm Megadeco (for faster decoration and impact-resistance)  
**System reference:** ETW 114M  
or, 1x 15mm Aqua Board (for wet areas)  
**System reference:** ETW 114A  
or, 1x 15mm LaDura (for impact and durability)  
**System reference:** ETW 114L

Technical info	
<b>Fire Resistance:</b> to EN 1364-1 (non-loadbearing)	EI 90 mins (inside to out) EI 90 mins (outside to in)
<b>Reaction to Fire:</b> to EN 13501-2	All components – at least A2 Limited Combustibility Weather Defence sheathing – A1 Non-Combustible Rock or glass mineral wool – A1 Non-Combustible
<b>Sound Insulation:</b> to ISO 10140-2	49 R <sub>w</sub> dB or 43 R <sub>w</sub> + C <sub>tr</sub> dB
<b>Height/strength:</b> to EN 1993-1-1	Varies by wind and cladding loading
<b>U-value:</b> to BR443 and BRE465 (Excluding cladding and fixing correction)	Varies by framing specification, indicative values below: 0.20 W/m <sup>2</sup> K      Studs 100x1.2 @ 600mm centres 0.23 W/m <sup>2</sup> K      Studs 100x1.6 @ 300mm centres 0.17 W/m <sup>2</sup> K      Studs 150x1.2 @ 600mm centres 0.22 W/m <sup>2</sup> K      Studs 150x1.6 @ 300mm centres

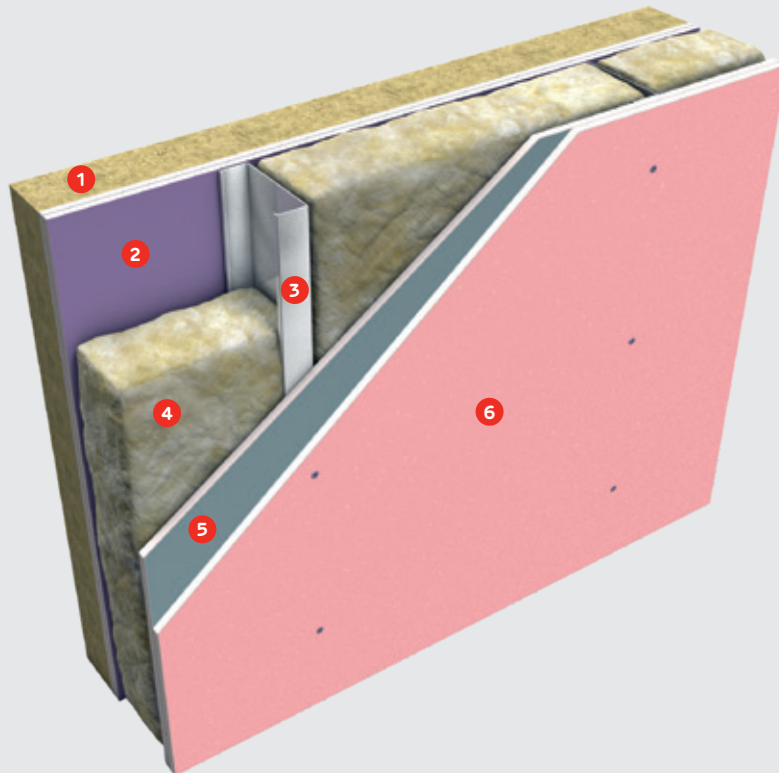
\*Laminated vapour control layers are available where required by condensation risk analysis.

Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

## OUR THRUWALL® SYSTEMS

### ETW 134: Double Weather Defence Sheathing, double layer internally – 120 minutes fire

120 minute Thruwall® System, for the tallest buildings and with improved sound insulation



- 1 External insulation:**  
100mm rock mineral wool (0.035 W/mK)
- 2 Sheathing:**  
2x 12.5mm Weather Defence
- 3 Framing:**  
EOS light steel infill framing
- 4 Cavity insulation:**  
Full-fill rock or glass mineral wool (0.035 W/mK)
- 5 Internal boards (inner):\***  
1x 15mm dB Board
- 6 Internal boards (outer):\***  
1x 15mm Fire Board (for standard applications)  
**System reference:** ETW 134F  
or, 1x 15mm Megadeco (for faster decoration and impact-resistance)  
**System reference:** ETW 134M  
or, 1x 15mm Aqua Board (for wet areas)  
**System reference:** ETW 134A  
or, 1x 15mm LaDura (for impact and durability)  
**System reference:** ETW 134L

#### Technical info

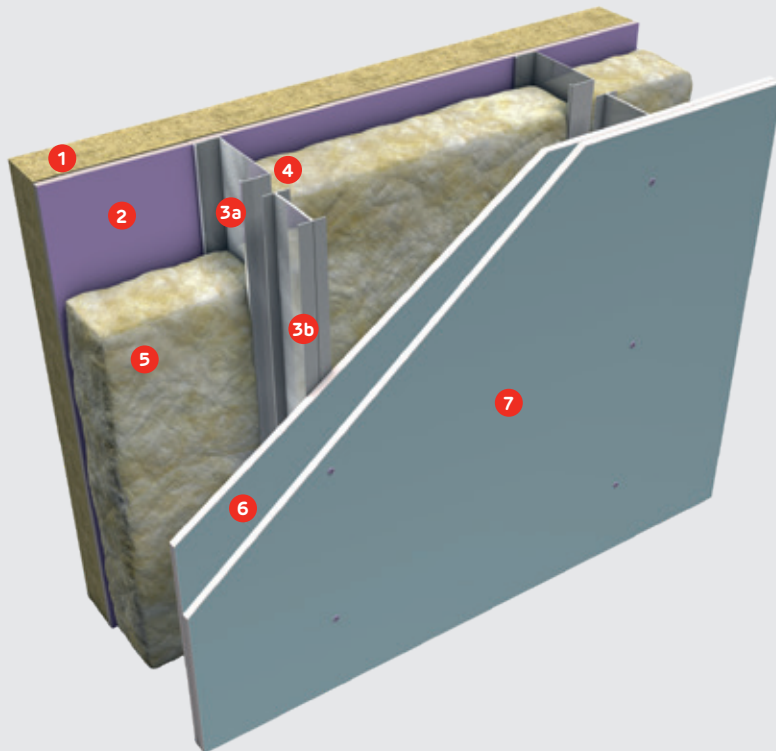
Fire Resistance: to EN 1364-1 (non-loadbearing)	EI 120 mins (inside to out) EI 120 mins (outside to in)
Reaction to Fire: to EN 13501-2	All components – at least A2 Limited Combustibility Weather Defence sheathing – A1 Non-Combustible Rock or glass mineral wool – A1 Non-Combustible
Sound Insulation: to ISO 10140-2	50 R <sub>w</sub> dB or 45 R <sub>w</sub> + C <sub>tr</sub> dB
Height/strength: to EN 1993-1-1	Varies by wind and cladding loading
U-value: to BR443 and BRE465 (Excluding cladding and fixing correction)	Varies by framing specification, indicative values below: 0.20 W/m <sup>2</sup> K      Studs 100x1.2 @ 600mm centres 0.23 W/m <sup>2</sup> K      Studs 100x1.6 @ 300mm centres 0.17 W/m <sup>2</sup> K      Studs 150x1.2 @ 600mm centres 0.23 W/m <sup>2</sup> K      Studs 150x1.6 @ 300mm centres

\*Laminated vapour control layers are available where required by condensation risk analysis.

Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

## ETW 213: Weather Defence Sheathing, double layer on internal lining – 60 minutes fire

60 minute Thruwall® solution for medium-rise construction



- 1 External insulation:**  
100mm rock mineral wool (0.035 W/mK)
- 2 Sheathing:**  
1x 12.5mm Weather Defence
- 3 Framing:**  
**3a:** EOS Light steel infill framing  
**3b:** 70/90mm GTEC I-Stud Lining
- 4 Cavity:**  
Varies (min. 10mm)
- 5 Cavity insulation:**  
Partial or full-fill rock or glass mineral wool (0.035 W/mK)
- 6 Internal boards (inner):\***  
1x 12.5mm dB board  
**System reference:** ETW 213D  
or, 1x 12.5mm Megadeco (for faster decoration and impact-resistance)  
**System reference:** ETW 213M  
or, 1x 12.5mm Aqua Board (for wet areas)  
**System reference:** ETW 213A  
or, 1x 12.5mm LaDura (for impact and durability)  
**System reference:** ETW 213L
- 7 Internal boards (outer):\***  
1x 12.5mm dB board (for standard applications)

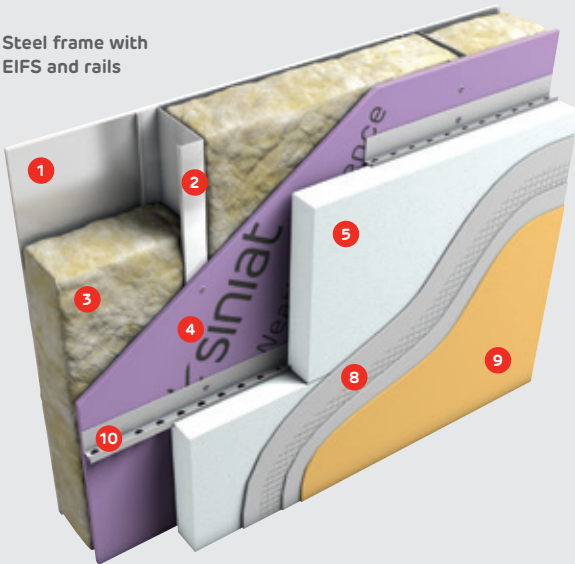
Technical info	
<b>Fire Resistance:</b> to EN 1364-1 (non-loadbearing)	EI 60 mins (inside to out) EI 60 mins (outside to in)
<b>Reaction to Fire:</b> to EN 13501-2	All components – at least A2 Limited Combustibility Weather Defence sheathing – A1 Non-Combustible Rock or glass mineral wool – A1 Non-Combustible
<b>Sound Insulation:</b>	59 R <sub>w</sub> dB or 49 R <sub>w</sub> + C <sub>tr</sub> dB
<b>Height/strength (SFS):</b> to EN 1993-1-1	Varies by wind and cladding loading
<b>Height (Internal Lining):</b> to L/240	IS70/B: 4.5m IS90/B: 5.4m
<b>U-value:</b> to BR443 and BRE465 (Excluding cladding and fixing correction)	Varies by framing specification, indicative values below: 0.19 W/m <sup>2</sup> K      Studs 100x1.2 @ 600mm centres + I-Stud lining @ 600mm centres 0.23 W/m <sup>2</sup> K      Studs 100x1.6 @ 300mm centres + I-Stud lining @ 600mm centres 0.17 W/m <sup>2</sup> K      Studs 150x1.2 @ 600mm centres + I-Stud lining @ 600mm centres 0.22 W/m <sup>2</sup> K      Studs 150x1.6 @ 300mm centres + I-Stud lining @ 600mm centres

\*Laminated vapour control layers are available where required by condensation risk analysis.

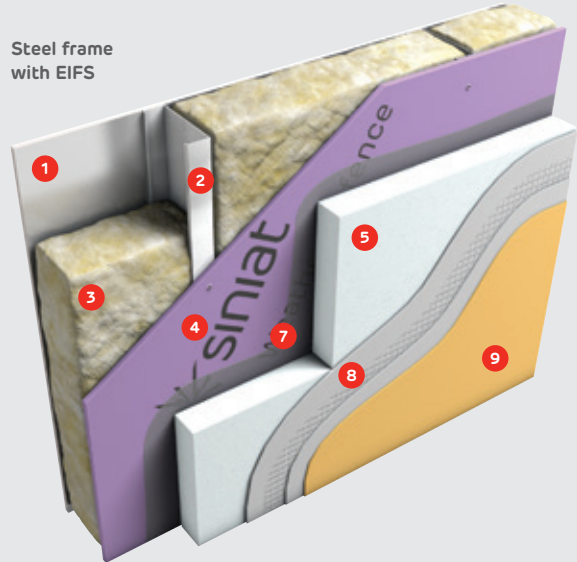
Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

## TYPICAL CLADDING OPTIONS

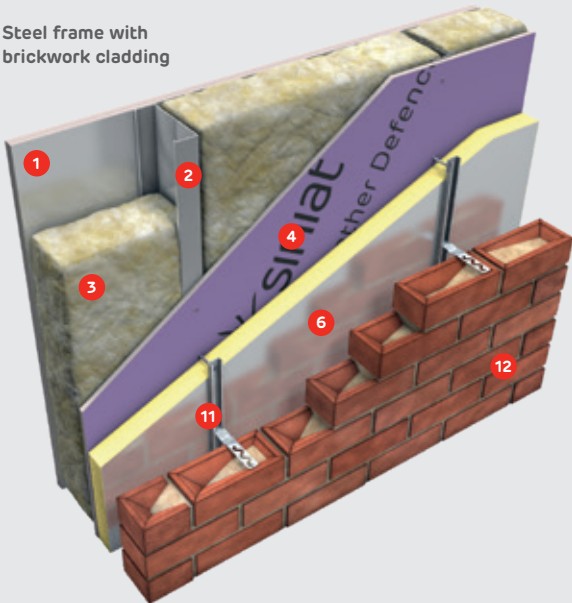
Steel frame with EIFS and rails



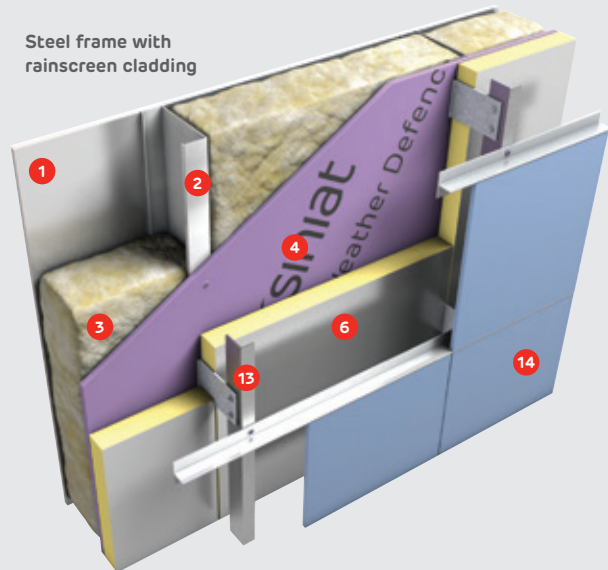
Steel frame with EIFS



Steel frame with brickwork cladding



Steel frame with rainscreen cladding



- 1 Siniat Internal Board to suit specification
- 2 EOS Steel framing to manufacturer's specification
- 3 Rock Mineral wool insulation to meet specification
- 4 Weather Defence external sheathing board

- 5 Insulation for EIFS system fixed to framing
- 6 Additional cavity insulation
- 7 Insulation fixed to board with adhesive
- 8 Render reinforcement mesh and adhesive
- 9 Render finish

- 10 Insulation support rail fixed back to frame
- 11 Brick tie system to manufacturer's guidelines
- 12 Brickwork cladding
- 13 Rainscreen support rail system to manufacturer's guidelines
- 14 Rainscreen cladding to suit specification

# INSTALLATION BENEFITS

Why Weather Defence is significantly quicker to install than cement particle board

- It can be accurately scored and snapped with a Stanley knife
- No transportation time to a separate cutting area
- It is light and easy to transport around on-site by two people
- It can eliminate the need for a breather membrane, taking a stage out of the weathertightness process
- Fine details are easily prepared on the framework using a pad saw
- Can be left exposed on frame for up to twelve months.

But you don't have to take our word for it...



"Compared to cement particle board, Weather Defence is 30% lighter, faster to work with and has advanced technical performance. We ultimately have a board with greater benefits but at the same price."

Steve Waugh, Design Manager, BAM Construction

"...the job was completed much faster, more safely and we saved money."

Lee Davis, Site Manager, Manorcra

"The lighter weight of Weather Defence meant we could easily cut holes in situ without having to bring the board down to the ground each time. This sped up construction."

Jurgen Mensinga, Director, Elite Cladding Systems

"Weather Defence saves us so much time – we use it whenever we can."

Tommy Burke, Director, Brebur

# INSTALLATION BENEFITS

Provides manual handling and health and safety benefits

## Why use Weather Defence?

### Weight

Weather Defence weighs 10.8 kg/m<sup>2</sup> which is 30% lighter than a cement particle board of the same thickness, making it easier to lift and move around site.

### Safety

When cutting, cement particle boards require an electrical circular saw with a sharp blade. In contrast, Weather Defence just requires a Stanley knife hand tool.

### Dust hazards and cutting areas

Cutting cement particle boards is likely to generate large quantities of very fine dust, which requires effective emission ventilation – often a cutting area some distance from the installation area. In contrast, the score and snap method used for Weather Defence generates minimal dust levels and doesn't require a separate cutting area.

### Noise disturbance for neighbours

As Weather Defence is so quiet to cut and fix, it has proved very useful for projects where neighbours are in close proximity – like extension projects or in built-up residential areas.





### Making the project weathertight to improve the project's Critical Path

Weather Defence is water, weather and mould resistant and can be left exposed on frame for up to 12 months. It makes the project watertight which means the internal trades – dry liners, electrical engineers, heating engineers etc. – can begin work in advance of the completed façade.

“If we'd gone down a traditional brick build (instead of using Weather Defence), it would have taken two years to get the building watertight.”

Brian Smith, Design Manager,  
Graham Construction



# INSTALLATION BENEFITS

## CASE STUDY: Dolphin School

The Dolphin School, is a BAM Construction project for a major extension to create a new two form entry primary school for approximately 420 pupils. With the build taking place on a very constrained site in the heart of Bristol, with close neighbouring properties and the existing school within feet from the live site, Weather Defence delivered practical benefits for the contractors to handle these issues.



"Weather Defence is lightweight compared to other products. In terms of cutting we don't have the issues with something similar like a cement base board in terms of dust issues. You don't need to take up big cutting areas on-site, and with the proximity of so many neighbouring proximities around here, we obviously have noise and dust considerations to think about."

**Paul Lacey, Senior Site Manager, BAM Construction**



"The Weather Defence board is ideal because you can manual handle it with two people either end of the board, it's quite lightweight, robust and easy to manoeuvre around site."

**Tyler Clark, Trainee Site Manager, Optimum Drywall Systems Ltd**



"Using Siniat Weather Defence board it is easier to form these angles, whereas when you are using a cement board you have to use a skill saw to rip through the cement board and it can be trial and error and often with this (Weather Defence) as it is like an internal plaster board we can use a padsaw, a rasp, or a just a normal saw to form the angle as neatly as this one."

**Tyler Clark, Trainee Site Manager, Optimum Drywall Systems Ltd.**

Dolphin School,



Recent Siniat Weather Defence project:  
**Dolphin School, Bristol**

Sector: **Education**  
Architect: **AWW Architects**  
Contractor: **BAM**  
Sub-contractor: **Optimum Drywall Systems Ltd**

# ENGINEERING WEATHER DEFENCE

## Creating an airtight envelope

### Weather Defence can dramatically reduce air leakage:

- It is easily cut and shaped, to form tight, clean and airtight junctions around complex details
- It is also extremely stable, hardly expanding or contracting in reaction to weather and humidity, making joints stable and air-tight for the long-term
- The Weather Defence sheathing layer forms an extremely large area of the building envelope which can be sealed easily, and is situated away from internal fittings which might penetrate internal linings
- The board and joints have negligible airflow through them, projects built with Weather Defence consistently exceed airtightness values demanded from both Building Regulations and low energy, low permeability designs.

### Laboratory evidence:

#### Air permeability:

- Tested for air permeability to European standard EN 12114
- Achieved  $0.002 \text{ m}^3/\text{m}^2/\text{hr}$  – a negligible flow of air.

#### Humid movement:

- A range of moisture expansion tests to EN318 were conducted
- Achieved maximum expansion of just 0.11mm per m (0.011%), from 65% to 85% relative humidity, typical of the British climate.



Abercynon Primary School, South Wales

Project specification  
for airtightness:  $3 \text{ m}^3/\text{m}^2/\text{hr}$   
Achieved:  $2 \text{ m}^3/\text{m}^2/\text{hr}$

“Siniat Weather Defence board provided an effective primary air-seal for the building envelope on a number of schools which achieved less than  $1.5 \text{ m}^3/(\text{Hr} \cdot \text{m}^2)$  at 50 Pascal.”

Ed Westgate Director, HRS Services Limited  
(Air Tightness Consultancy & Testing)

## Resisting Moisture and Breathing Vapour

**Weather Defence both resists rain and moisture, and allows vapour to escape, just like a breather membrane.**

- Weather Defence is an extremely stable substrate and will only expand by fractions of a millimetre per mm as humidity changes. This means that gaps do not need to be left between boards
- The board itself is also vapour open yet highly water resistant, allowing damaging moisture trapped within a wall to escape.

### Laboratory evidence:

Vapour resistance test:

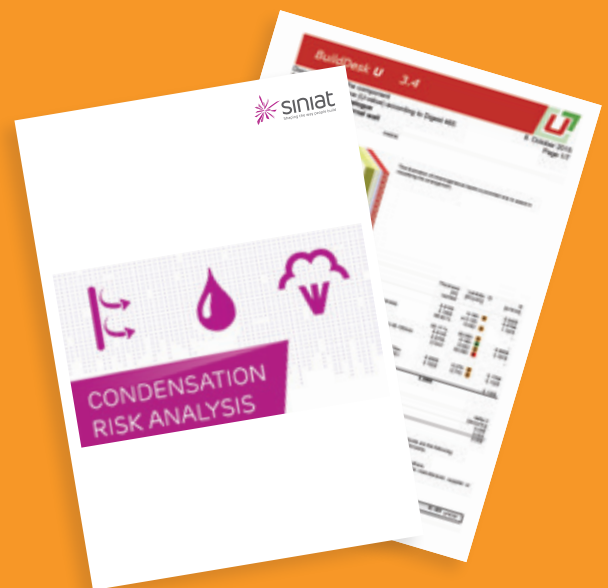
- Measured as 0.49 MN·s/g, or 8 $\mu$ , making Weather Defence a highly breathable building material
- Meets the requirements of a breather membrane - a breather membrane must be between 0.25 – 0.6 MN·s/g according to BS5250.

### Prevention of water penetration test:

- Test for prevention of water penetration EN13859-2
- Achieved Class W1 – the highest level for water resistance as – the same classification as a breather membrane.

### IMPORTANT TO NOTE:

Weather resistance performance relies upon Weather Defence being correctly installed and sealed. If installation has been poor, or for certain complex details, a breather membrane may still be advised – the project designers must decide if risks are present. A vapour control layer may be required internally, using a Siniat vapour resistant foil backed plasterboard. A condensation risk analysis should be carried out to determine the likelihood of condensation due to internal humidity and whether a vapour control layer is required.



### IMPORTANT TO NOTE:

Vapour control layers and breather membranes are not the same.

A vapour control layer resists all water vapour whether liquid or as a gas, and in Britain is used on the internal side of a wall to keep water vapour in the room rather than allow it into the wall.

A breather membrane is used on the external side of the wall build-up to prevent rain penetration from the outside but will allow water as a gas to escape if it finds a way into the wall.

Ask us for our Condensation Risk Assessment Report or download a sample copy from: [www.siniat.co.uk](http://www.siniat.co.uk)

# ENGINEERING WEATHER DEFENCE

## How it controls fire above 18m

### Fire:

- Weather Defence is a fully non-combustible, Euroclass A1 rated sheathing board
- The gypsum core locks moisture into the crystal structure of the gypsum material which suppresses temperatures during a fire
- It will not act as an additional fuel source in a façade cavity fire, whilst a breather membrane is combustible
- It can reduce transmission of fire if other materials in the façade ignite

### Reaction to fire test:

- Test conducted to BS EN 13501-1:2007
- Achieved Euroclass A1
- Fully non-combustible.

### Fire resistance testing:

- Tests conducted to BS 476-21, EN 1364-1 and EN 1365-1.

### Façades exceeding 18m in height:

- As a non-combustible board, Weather Defence is immediately compliant with Approved Document B (Fire) for façades exceeding 18m.

Please contact our Technical Services team for more information.

### IMPORTANT TO NOTE:

Fire cavity barriers may be needed within the wall build-up or façade cavity to fully comply with the building regulations, preventing spread from floor to floor through empty cavities or for the fire to break from the building into the cavity.

Additional fire protection may also be required in the wall to ensure fire resistance compartmentation is maintained.



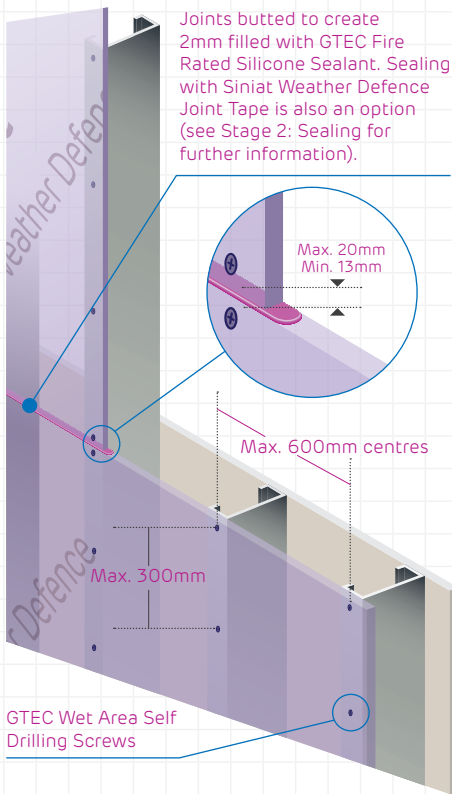
University of Salford

# INSTALLATION GUIDE

## Stage 1: Fixing Board to Steel Frame\*

Install boards horizontally in a staggered 'brick bond' pattern.

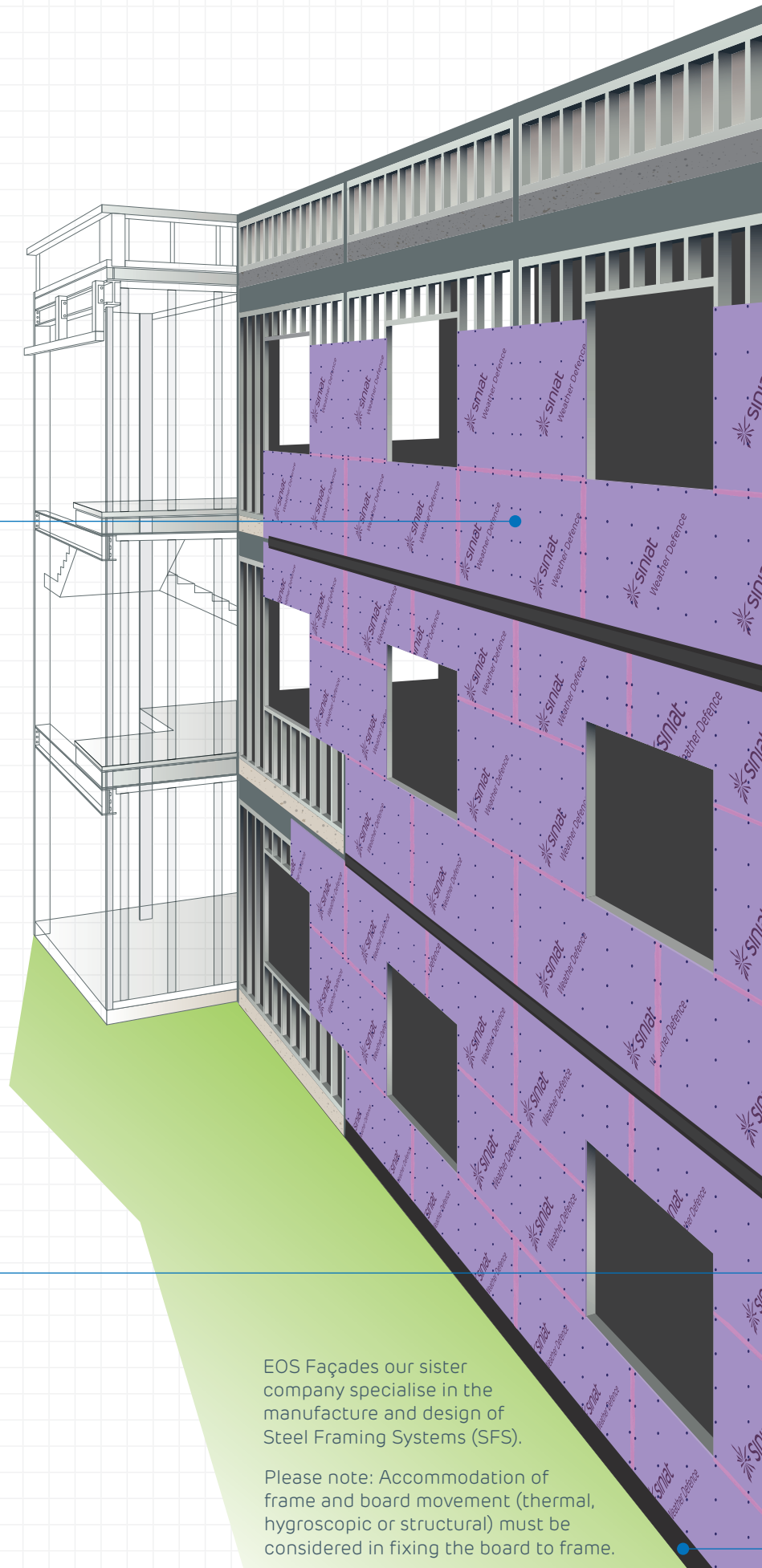
**Figure 1** Typical board fixing with GTEC Wet Area Self Drilling screws on to steel frame



Locate screws at least 13mm and no more than 20mm from board edges and penetrate at least 10mm into the substrate, see Fig 1, above.

Fix to studs at a maximum 300mm centres (or narrower if required for wind loadings, see Table 1, top right).

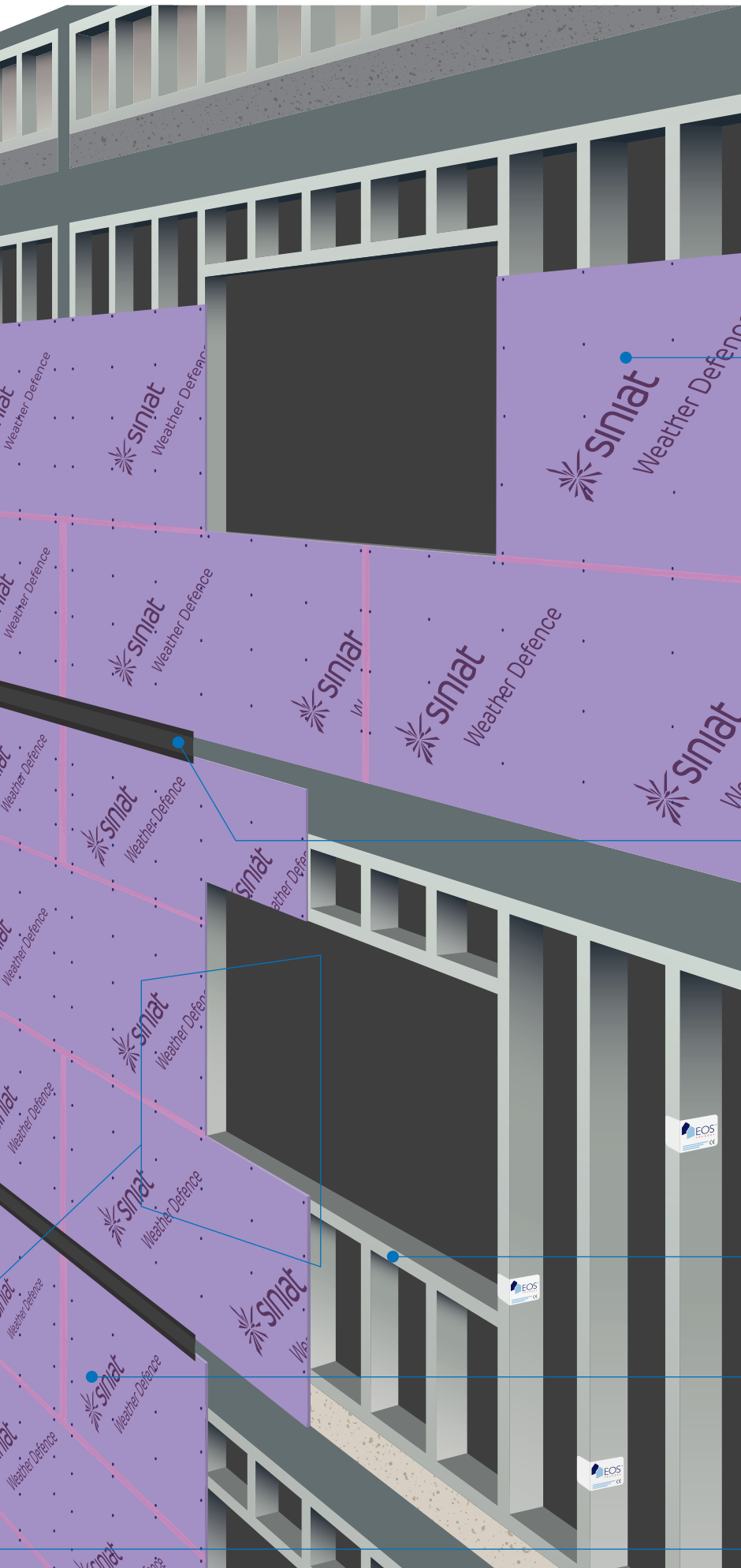
Use GTEC Wet Area Self Drilling screws for steel studs or combinations of steel studs up to 3mm thick (total).



EOS Façades our sister company specialise in the manufacture and design of Steel Framing Systems (SFS).

Please note: Accommodation of frame and board movement (thermal, hygroscopic or structural) must be considered in fixing the board to frame.





Do not fix to frames where stud centres exceed 600mm.

Higher wind loadings may require fixings at closer centres than 300mm and/or studs at closer centres than, 600mm, see Table 1, below.

**Table 1** Characteristic wind load resistance

STUD CENTRES (MM)	SCREW CENTRES (MM)	CHARACTERISTIC WIND LOAD (kN/M <sup>2</sup> )
600	300	1.275
600	200	1.915
400	300	1.915

Appropriate cold-applied sealing methods such as butyl tapes or EPDM, by others (e.g. Tremco Illbruck), should be used to seal deflection or movement joints created in the board layer.

Where metal build up exceeds 3mm contact Siniat Technical Services for fixing specification.

Boards can be fixed to the stud frame where the fastener passes through an intermediate material (e.g. a membrane, batten or cavity rail).

Separate board from areas where water may pool (e.g. damp proof membranes, cavity trays) by at least 5mm. Board should be installed above dpc and 150mm above ground level.

# INSTALLATION GUIDE



Curved Weather Defence boards

## Stage 1B: Curving Weather Defence

- SFS stud centres up to maximum 400mm centres for a curve radius no tighter than 4m
- Fix FS90/W Flat Plate to studs corresponding with all horizontal board joints
- Fit Weather Defence board horizontally across studs and install in a 'brick bond' pattern
- Fix using Siniat GTEC Wet Area Self Drilling screws at maximum 300mm centres
- Fire Rated Silicone Sealant or Weather Defence Joint Tape used to seal joints, see opposite.

## Stage 2: Sealing

### Which sealing option:

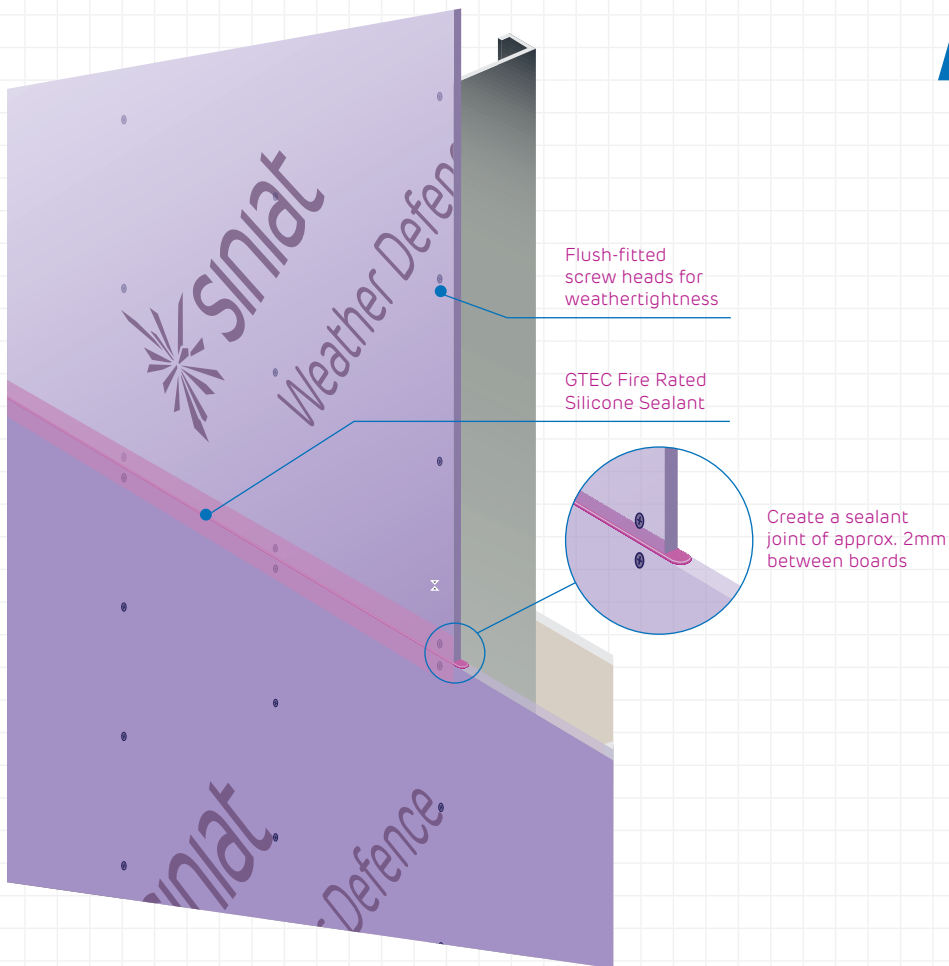
- Silicone sealants provide a robust weather seal as they allow two boards to be squeezed together which limits the opportunity for water and air leakages
- For fire resistance: use GTEC Fire Rated Silicone Sealant where fire resistance of 30 minutes or above is required
- Siniat Weather Defence Joint Tape may be used where no fire resistance or acoustic insulation is required. Sealing tapes should be checked for compatibility with silicone sealant, if used together. Use primer when using tapes over silicone joints
- Any gaps in the sealant should be filled with additional sealant
- Flush-fitted screw heads are weathertight. Sealing with a dab of sealant will prevent issues where a screw is not perfectly flat
- Multiple attempts to fix a screw may create holes, inspect for holes carefully and seal
- Where watertightness is critical, we recommend detailed inspection and hose testing
- Only use cold applied waterproofing materials
- Appropriate cold-applied sealing methods such as butyl tapes or EPDM, by others should be used to seal deflection or movement joints created in the board layer
- Sealing methods and associated details should accommodate all expected movement and satisfy the need for acoustic, fire, weather, or other performance requirement expected from the Weather Defence sheathing layer
- Additional layers of boards or rock mineral wool may be required to maintain fire resistance at movement joints and in cavities.

### Applying sealant:

- Apply sealant as boarding progresses, along the previously fixed board edge prior to installation of the next board
- Apply sufficient sealant to create a sealant joint of approx. 2mm when the next board is loosely butted

Table 2 Sealing capability

Joint sealing method	LEVEL OF SEALING REQUIRED		
	Air	Acoustic	Fire
GTEC Fire Rated Silicone Sealant	●	●	●
Siniat Weather Defence Joint Tape	●	○	○



**Applying Weather Defence Joint Tape:**

- Tape may be applied at any time within the twelve month exposure period following installation providing that limited water penetration through unsealed joints is acceptable
- Do not use tape in combination with silicone sealant. Where unavoidable use appropriate primer over the silicone, contact Technical Services for more information
- The tape is air and water tight and UV resistant for at least 12 months
- The Weather Defence board surface should be generally clean, dry and free of oil, dust and other particles or chemicals that could cause poor adhesion – significant contamination may impair adhesion
- No gap is required between boards when sealing with tape, lightly butting the boards will usually create a 0–0.5mm gaps which is more than sufficient to allow expansion
- Peel backing paper from the tape as the operation progresses
  - Apply with joint running along the centre of the tape – this will usually cover screw fixings
  - Apply without wrinkles or excessive tension in the tape. Firmly press, and smooth against Weather Defence board. Running over the tape with a roller may improve adhesion
  - Minimise the number of pieces of tape used to reduce risk of gaps. Overlap tapes by minimum of 50mm where multiple pieces have to be used. Ensure overlaps are pressed firmly against board and fully sealed
- Seal horizontal joints first and run tapes for vertical joints over the top of the horizontal band of tape
- Patch tapes with additional 150mm pieces perpendicular to the original tape, rather than removing strips from the Weather Defence board and risking damage to the substrate
- Where high levels of rain tightness are required it is advised to use a hose test to identify holes or gaps
- Tape may be applied between 5°C and 40°C. Installation may proceed at temperatures as low as -10°C and damp conditions if grab/tack is sufficient. Primers may be required to increase adhesion in severe conditions, contact Technical Services for more information.

# INSTALLATION GUIDE

## Stage 3: Board Inspection

We advise you to inspect the Weather Defence boards for any damage prior to closing off the sheathing layer (e.g. with insulation or other cladding) and after extreme weather.

### Pay particular attention to:

- Any facer delamination/removal greater than 5mm
- Any degradation of the board core greater than 2mm deep, which may occur in the lower portion of the board if it has inadvertently been immersed in water
- Any significant dents, scrapes or tears which have occurred during construction
- Holes through the board caused by repeated attempts to screw fix, all holes must be sealed (see previous section – Sealing)

### How to deal with damage:

- Small areas of damage, up to 15mm x 15mm and maximum 3mm deep, may be patched using Siniat Fire Rated Silicone Sealant or Siniat Weather Defence Joint Tape
- Areas up to 300mm x 300mm and maximum 5mm deep, may be filled with Siniat Aquamix water resistant compound
- An area larger than 300mm x 300mm or if the board has been perforated by damage must be replaced. Additional metal noggins or straps may be required to support the board.

# INSTALLATION GUIDE

## Stage 4: Insulation Fixing

### Cavity and Insulation Rail Fixing:

- Rails or battens may be used with Weather Defence to create cavities to meet NHBC requirements for dwellings, or to support insulation; they should be fixed directly to studs
- Intermediate rail fixings, or where the rail cannot be located over a stud, may be made directly into Siniat Weather Defence Boards using appropriate cavity anchors.

It may be necessary to reduce fixing centres from manufacturer's standard recommendation to achieve adequate pull out resistance; this must be determined by the rail system supplier or a qualified engineer.



Close-up of board

**Insulation Fixing:**

- Both dense mineral wool and rigid foam sheet insulation are suitable for use with Weather Defence. *Please see Fire section on page 31 of this document for additional guidance on insulation above 18m in height*
- The number and type of insulation fixings should be determined by a wind loading assessment which should be carried out by an appropriately qualified engineer. This will provide the maximum positive and negative load per square metre to be resisted
- Resistance to the maximum load is not always required in all locations on the building e.g. sheltered façades may be subject to much lower wind forces, whereas at corners the magnitude increases
- Insulation may be fixed using mechanical or adhesive methods

**Adhesive Fixing:**

- Using adhesive fixing typically provides a pull-off resistance many times greater than wind load
- Adhesive fixing also limits the bowing of individual insulation boards and prevents small air gaps forming behind the boards
- It is highly recommended as an installation method for fixing insulation to Siniat Weather Defence – always follow adhesive manufacturer’s recommendations and guidance
- Mechanical fixings are required to temporarily support the self-weight of the insulation board and wind loads while the adhesive cures
- It is always recommended to provide temporary retention by fixing through to studs. Where it is impractical to fix to studs, it is

possible to temporarily retain insulation directly fixed to the board using appropriate fixings – a minimum of five fixings per square metre is required

- NHBC Standard 6.9.8 and CWCT Standards require the use of one additional non-combustible fixing per square metre, made permanent into the structure, and in addition to adhesive fixing.



Weather Defence Joint Tape being applied

**Mechanical Fixing:**

- The required number of insulation fixings depends on the magnitude of the wind loading per square metre to be resisted
- Historically, the total wind load is divided by a conventional pull-out resistance to give the number of fixings required where each fixing resists an identical load
- Alternatively, insulation fixings into the metal studs, which will typically achieve pull-out of >1.65kN per fixing (Category B in Table 3, overleaf), can be considered to provide the full

resistance to wind loading. This alternative configuration provides an optimised fixing solution

- Suitable additional fixings into the field of the board to limit insulation bowing and support self-weight are recommended (Category A criteria fixings in Table 3, overleaf)
- Figure 3, overleaf, shows typical fixing patterns with fasteners shared between adjoining 1.2 x 0.6 m insulation panels to achieve 1.5 kN/m<sup>2</sup> wind suction load as an example

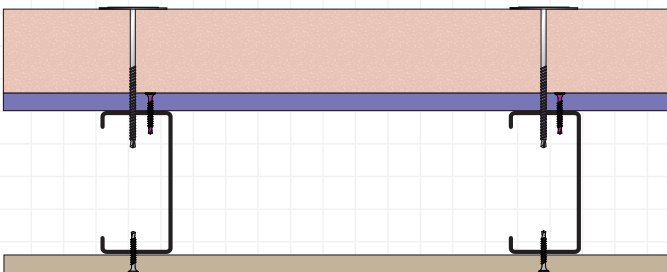
- Insulation retention ‘washers’ must be appropriately sized to restrain the insulation without damage and provide the required pull-through resistance
- Additional fixings may be required at jambs, sills or in other areas of frame variation; advice should be sought from the system manufacturer
- When using cavity rails, insulation fasteners should not bridge between rail and board.

# INSTALLATION GUIDE

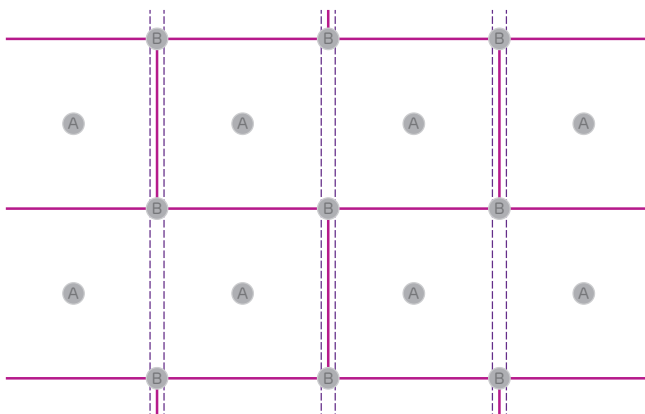
**Table 3** Insulation fastener categories

Fixing category	Substrate	Minimum load resistance	Purpose of insulation fixing	Examples
<b>Category A</b>	Siniat Weather Defence	0.5 kN (mean ultimate)	Permanently support self-weight and limit deflection/bowing. No wind load	<ul style="list-style-type: none"> <li>• Etanco SK-RB</li> <li>• Spit Isomet CC</li> </ul>
<b>Category B</b>	Steel	1.65 kN (mean ultimate)	Permanently support self-weight, limit deflection/bowing and provide wind load resistance	<ul style="list-style-type: none"> <li>• Self-drilling screw fixing, e.g. Ejot SW8R</li> </ul>

**Figure 2** Insulation fixed to studs with typical insulation fixings (**Category B in Table 3**)



**Figure 3** Typical fixing pattern (1.2 x 0.6m insulation board) up to 1.5kN/m<sup>2</sup> characteristic wind load (**See Table 3 for fixing types**)



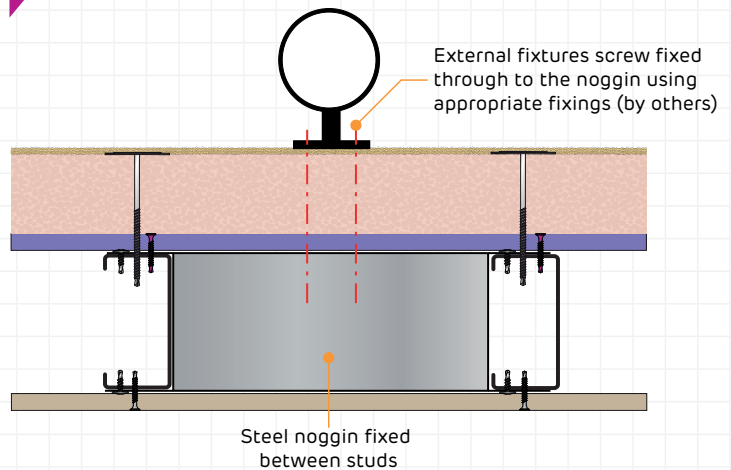
**Cladding and Rainscreen Fixing:**

- All cladding loads must be directly supported by the structural frame and not carried by the Siniat Weather Defence Board. Weather Defence may act as an intermediate layer provided the cladding fixings are attached to the frame through the board
- Bearing pressure on Weather Defence from brackets must not exceed 2.5N/mm<sup>2</sup>. Spreader plates will be required in rare instances where this pressure is exceeded.

**Fixtures:**

- Where possible, all fixtures should be fixed back to the frame studs
- Suitable pattresses may be installed into the frame in specific locations to provide fixing capability, e.g. for external lighting or downpipes. Ideally additional metal studs or noggins should be provided for this purpose
- Lightweight fixtures may be fixed directly to Siniat Weather Defence without pattresses using specialist cavity anchors. Generic pull-out data is available from [technical.services@siniat.co.uk](mailto:technical.services@siniat.co.uk) or from fixing suppliers who will conduct testing and fixing selection specific to the site.

Figure 4 Lightweight Fixtures attached to Weather Defence



Insulation on Weather Defence

# STEEL FRAME SYSTEMS FROM EOS FAÇADES

Complementary systems from EOS Façades, an Etex Building Performance company.

In 2016, Siniat acquired steel frame system manufacturer, EOS Façades. Its range of light gauge steel frame systems – continuous walling, stud and track and prefabricated façade panels – work effortlessly with Weather Defence.

Similarly to Siniat, EOS Façades provide comprehensive technical support, including design and structural calculations.

To see how Steel Frame Systems from EOS Façades could complement your project, call the EOS enquiry line on: **01325 303030**

**EOS Façades enquiries**  
For placing orders, delivery enquiries, local stockists etc.

☎ **01325 303030**  
✉ **enquiries@eosuk.org**

Weather Defence in conjunction with an EOS Steel Frame System



“In my eyes, EOS Façades are the best SFS supplier in the UK by a country mile; the EOS system is more user-friendly for a variety of reasons and the quality surpasses anything on the market.”

Mark Huntley, Managing Director,  
M&P Contractors Wales Ltd





# TECHNICAL CHARACTERISTICS

Type	Description	Performance Values	Units
<b>General</b>	Density	<b>860</b>	kg/m <sup>3</sup>
<b>Mechanical properties</b>	Flexural strength longitudinal direction according to BS EN 520:2004	<b>680</b>	N
	Flexural strength transverse direction according to BS EN 520:2004	<b>310</b>	N
	Elastic modulus longitudinal direction according to BS EN 789:2004	<b>3600</b>	MPa
	Elastic modulus transverse direction according to BS EN 789:2004	<b>3150</b>	MPa
	Impact resistance according to BS EN 15283-1:2008	<b>GM-I</b>	
	Compressive strength	<b>9</b>	N/mm <sup>2</sup>
<b>Fire</b>	Reaction to fire – Euro class according to BS EN 13501-1:2007	<b>A1</b>	
<b>Thermal</b>	Thermal conductivity according to BS EN 12667:2001	<b>0.25</b>	W/mK
	Thermal resistance (12.5mm board)	<b>0.05</b>	m <sup>2</sup> .K/W
<b>Permeability</b>	Water vapour resistance (12.5mm board) according to BS EN ISO 12572:2001	<b>0.49</b>	MNs/g
	Water vapour resistance factor (μ) according to BS EN ISO 12572:2001	<b>8</b>	
<b>Moisture resistance</b>	Water uptake (2 hrs immersion) according to EN 520:2005	<b>&lt; 3</b>	%
	Surface water absorption (2 hrs Cobb test) according to EN 520:2005	<b>&lt; 100</b>	g/m <sup>2</sup>
	Dimensional change (20°C/30%-65%RH), longitudinal direction dimensional stability according to BS EN 318:2002	<b>0.09</b>	mm/m
	Dimensional change (20°C/65%-85%RH), longitudinal direction dimensional stability according to BS EN 318:2002	<b>0.11</b>	mm/m
	Dimensional change (20°C/30%-65%RH), transverse direction dimensional stability according to BS EN 318:2002	<b>0.09</b>	mm/m
	Dimensional change (20°C/65%-85%RH), transverse direction dimensional stability according to BS EN 318:2002	<b>0.05</b>	mm/m
<b>Mould resistance</b>	Resistance to mould growth – ASTM O3273	<b>10/10</b>	No mould growth
<b>Pull-through (with 3x safety factor)</b>	Pull-through resistance (23°C /50%RH), Siniat Wet Area High Thread fixing according to EN 1383	<b>312</b>	N
	Pull-through resistance (23°C /50%RH), Siniat Wet Area Self Drilling fixings according to EN 1383	<b>326</b>	N
		<b>254</b>	N
<b>Shear strength</b>	Shear resistance according EN520	<b>0.88</b>	kN/Screw
<b>Pull-through resistance (centre)</b>	Siniat GTEC Wet Area Self Drilling	<b>0.33</b>	kN
	Siniat GTEC Wet Area High Thread	<b>0.31</b>	kN

### Waste and recycling

- The gypsum core in Weather Defence is fully recyclable and site off-cuts are accepted by GTEC Wasteline Direct service for recycling into new plasterboard products
- Gypsum powder from the recycled board fully meets the quality criteria of BSI PAS109\* in relation to composition, paper fibre content and purity. This provides for diversion from landfill into recycling markets
- Weather Defence is supplied with minimal packaging and the pallets are composed of recyclable material with PEFC certification.

\*Specification for the Production of Recycled Gypsum

### Handling and storage

When manually handling Weather Defence, consideration of the correct manual handling technique has to be made to limit risk, according to the Manual Handling Operations Regulations 1992.

Weather Defence is supplied on pallets. Packs should be moved using a fork lift truck or hydraulic trolley. Care should be taken to ensure that the machinery is safely capable of such movements and that the operator is trained and competent.

Weather Defence should be stored in dry, flat conditions.

Weather Defence is weather resistant when installed in the vertical plane and able to shed water.

Weather Defence is not a suitable product to be used as a platform or deck, it will not support body weight and therefore it is important that installers use an independent support mechanism.

### Pack sizes

Board thickness: **12.5mm**

Width: **1200mm**

Length: **2400mm**

Boards per pallet: **52**

Board weight: **10.8kg/m<sup>2</sup>**

Pallet weight: **1.62 tonnes**

Max. height incl. pallet: **750mm**

### Personal protection

**Respiratory:** Adequate localised ventilation or extraction is recommended when creating dust and fibres. Alternatively use appropriate respiratory protection.

**Eyes:** Eye protection is recommended when dust and/or fibres are likely to be generated as irritation may be caused by contact.

**Hands:** Gloves should be worn when handling this product.

## WARRANTIES

Weather Defence benefits from a 12 year warranty when built with Siniat components and materials. This must be installed by qualified professionals in accordance with our latest literature and relevant standard. See [www.siniat.co.uk](http://www.siniat.co.uk) for more details.

### Weather Defence delivers on performance

- Weather Defence has two BBA certificates; one for the product and one for the system
- The information you need upfront to prove it will deliver on technical performance.







To see how Weather Defence can benefit your next project, call our Technical Services team on **0800 145 6033**.

**GB Orderline**

For placing orders, delivery enquiries, local stockists etc.

 **0800 373 636**


 **01275 377 700**

 **orderline@etexbp.co.uk**

**Technical Services Department**

Advisory service.

 **0800 145 6033 or 01275 377 789**

 **01275 377 456**

 **technical.siniat@etexbp.co.uk**

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