



# Weather Defence™

A1 non-combustible  
external sheathing board

**Cover Image:** Bath University

**Inside spread:** South Devon UTC



#### Revision history

Version	Date of publication
1.0.0	2016
1.1.0	2017 Updated to 6 months exposure
1.2.0	June 2019 Updated to 12 months exposure
1.2.1	March 2023 Updated Reaction to Fire classification standard
1.3.0	September 2024 Brand updated and technical reviewed

Please check that this is the current version by visiting the [Siniat website](#). For archived versions please [contact Technical Services](#).

# product overview

Weather Defence™ is an A1 non-combustible external sheathing board which has transformed building envelope construction and performance.

Weather Defence™ has been widely specified by AJ100 British Architects

The design benefits it brings include:

- It is Euroclass A1, fully non-combustible, so is suitable for structures above 11m in height
- It has two BBA certificates
- It achieves outstanding airtightness whilst maintaining breathability
- It is easy to cut, shape, and bend, offering more options for design detailing
- Responsibly sourced and contributes towards credits under BREEAM.

- It is quicker to install than cement sheathing board
- Protects internal trades from weather during construction
- It is lighter than cement boards, making it easier to lift and move around site
- Simply score and snap, no need for specialist cutting equipment, or segregated areas
- Helps reduce site noise and dust emissions from machine cutting
- Can eliminate the need for a breather membrane helping to reduce project costs.

The 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.

Weather Defence™ is also a lightweight board that can be used to create striking curves and shapes, allowing more architectural creativity.

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:**

- Non-load bearing SFS and oversail systems on concrete and steel frame buildings
- Modular buildings
- Load bearing light gauge steel frame buildings
- Timber Frame Buildings.

Weather Defence™ has two BBA Certificates. One as a sheathing board for use behind a variety of rainscreen types, the other 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

## Suitable for a range of façades



**Brick cladding:** University of Salford



**Stone cladding:** Swansea University



**Timber rainscreen:** Typical timber façades



**Metal rainscreen:** Typical metal façade



**Fibre cement rainscreen panels:**  
Ice Arena, Wales



**Insulated render:** North Somerset Enterprise  
and Technology College



**design benefits** (continued)

## 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 and UKCA marked to EN 15283-1.

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

### **Specification Packs**

Siniat can provide Project Specification Packs for full Thruwall® systems to include the Remagin SFS design, and lining boards to meet project performance criteria.

Contact our technical department for more information.

 0800 145 6033

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



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.

**Design Manager**

Graham Construction (University of Salford Project)

Image: Swansea Bay Campus

# system performance

Gypsum technology is at the heart of Weather Defence™ system performance.

Gypsum's unique characteristics offer excellent fire resistance, airtightness and high sound insulation whatever framing system is used.

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



## Acoustic performance

Our Thruwall® Systems in the following pages 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 in the following pages 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-load bearing) in both directions and can provide fire resistance (EI) from 60 to 120 minutes depending on the system chosen. Weather Defence™, being of Euroclass A1 reaction to fire, contributes to the excellent fire performance of these systems.

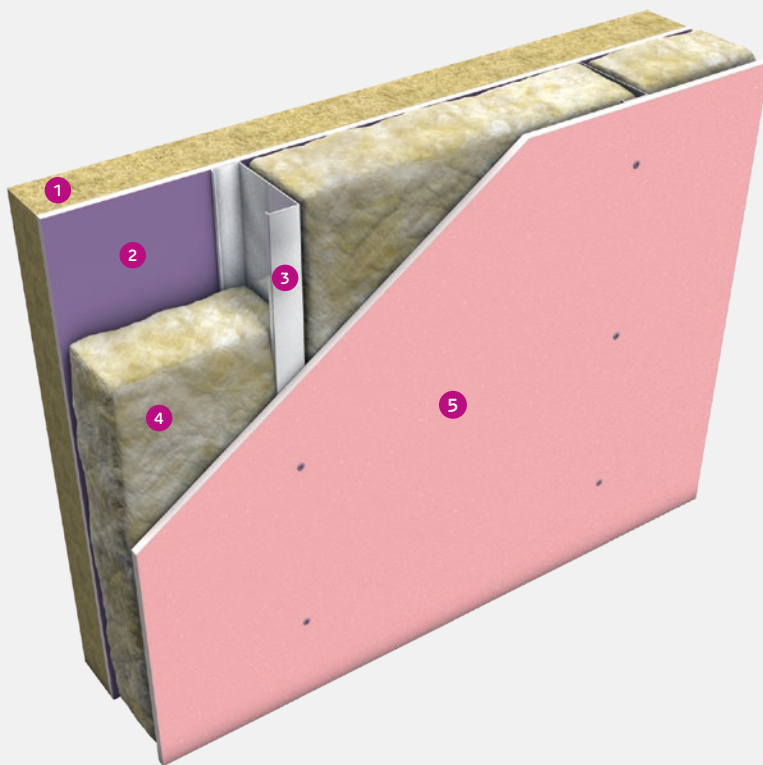
\*30-year warranty is available following a specification and a validation process, please contact us for further details and for terms and conditions. System components may not be substituted.



## 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 stone mineral wool (0.035 W/mK)
- 2 Sheathing:**  
1x 12.5mm Weather Defence™
- 3 Framing:**  
Remagin light steel infill framing
- 4 Cavity insulation:**  
Full-fill stone or 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

#### Technical info

<b>Fire Resistance:</b> to EN 1364-1 (non-load bearing)	EI 60 mins (inside to out) EI 60 mins (outside to in)
<b>Reaction to Fire:</b> to EN 13501-1	All significant components – at least A2 Limited Combustibility Weather Defence™ sheathing – A1 Non-Combustible Stone or 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

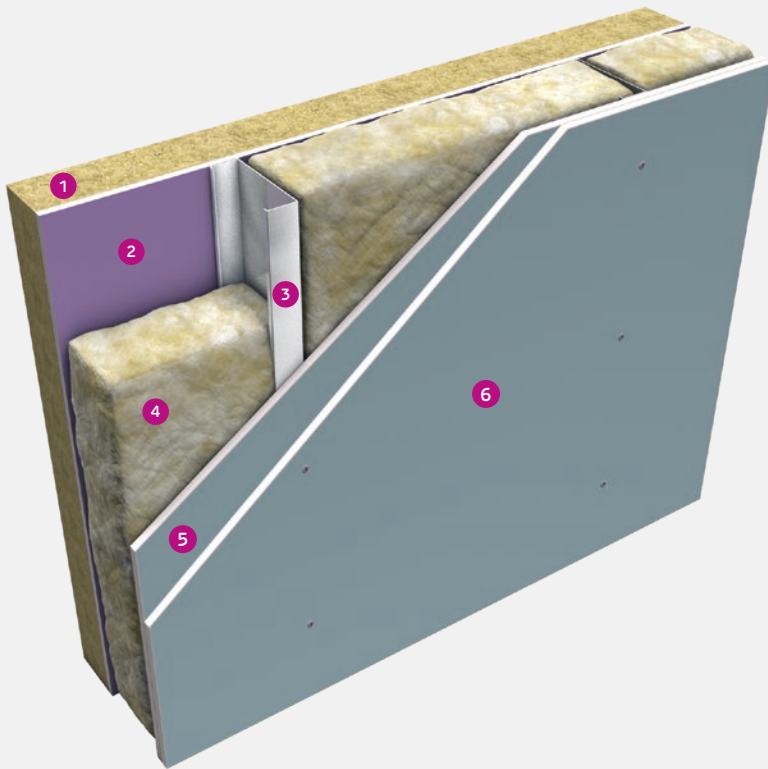
\*Laminated vapour control layers are available where required by condensation risk analysis.

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 stone mineral wool (0.035 W/mK)
- 2 Sheathing:**  
1x 12.5mm Weather Defence™
- 3 Framing:**  
Remagin light steel infill framing
- 4 Cavity insulation:**  
Full-fill stone 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

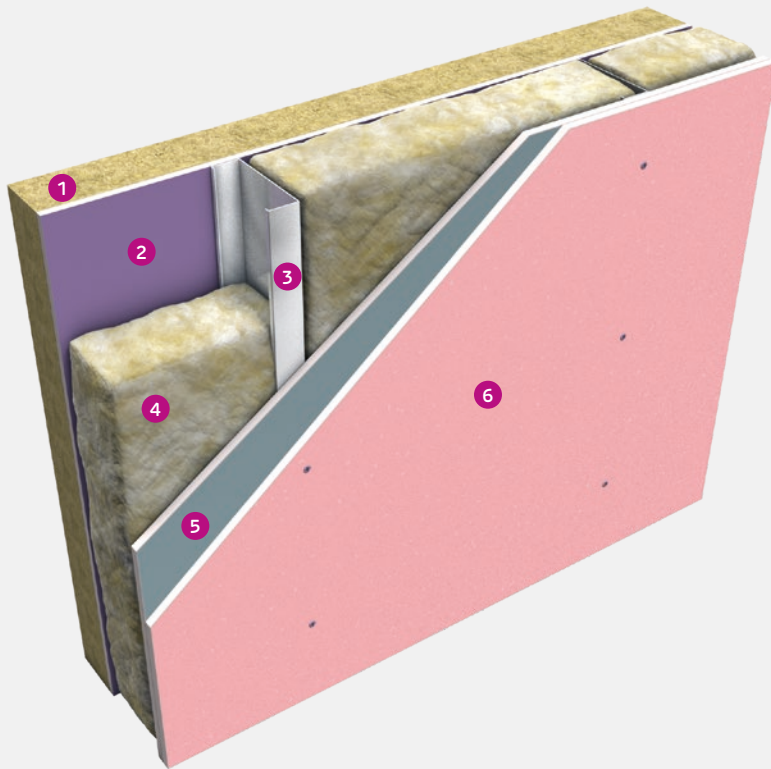
Technical info	
<b>Fire Resistance:</b> to EN 1364-1 (non-load-bearing)	EI 60 mins (inside to out) EI 90 mins (outside to in)
<b>Reaction to Fire:</b> to EN 13501-1	All significant components – at least A2 Limited Combustibility Weather Defence™ sheathing – A1 Non-Combustible Stone or glass mineral wool – 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/m²K     Studs 100x1.2 @ 600mm centres 0.23 W/m²K     Studs 100x1.6 @ 300mm centres 0.17 W/m²K     Studs 150x1.2 @ 600mm centres 0.22 W/m²K     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 stone mineral wool (0.035 W/mK)
- 2 Sheathing:**  
1x 12.5mm Weather Defence™
- 3 Framing:**  
Remagin light steel infill framing
- 4 Cavity insulation:**  
Full-fill stone 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

### Technical info

<b>Fire Resistance:</b> to EN 1364-1 (non-load bearing)	EI 90 mins (inside to out) EI 90 mins (outside to in)
<b>Reaction to Fire:</b> to EN 13501-1	All significant components – at least A2 Limited Combustibility Weather Defence™ sheathing – A1 Non-Combustible Stone 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

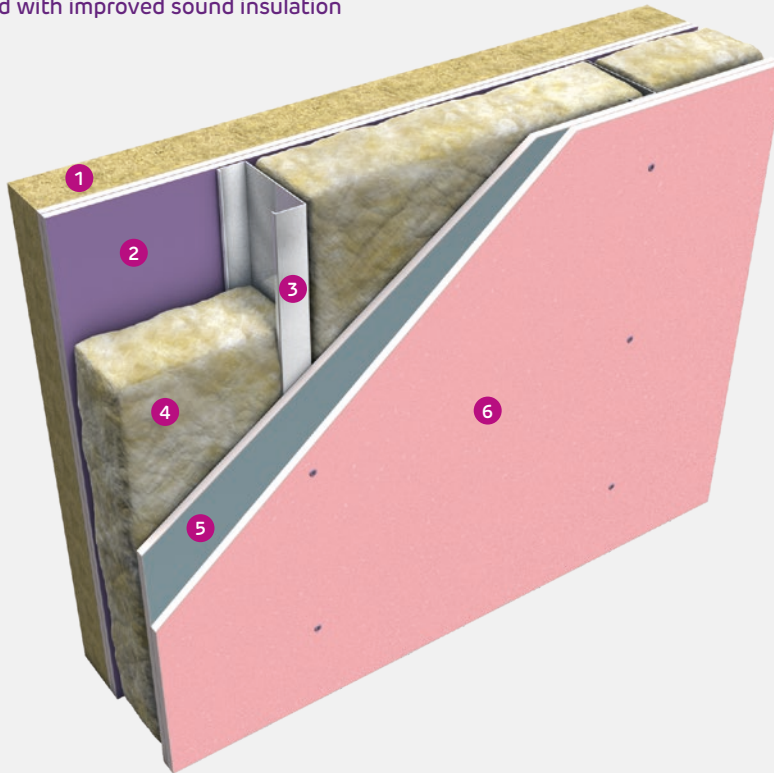
\*Laminated vapour control layers are available where required by condensation risk analysis.

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 stone mineral wool (0.035 W/mK)
- 2 Sheathing:**  
2x 12.5mm Weather Defence™
- 3 Framing:**  
Remagin light steel infill framing
- 4 Cavity insulation:**  
Full-fill stone 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

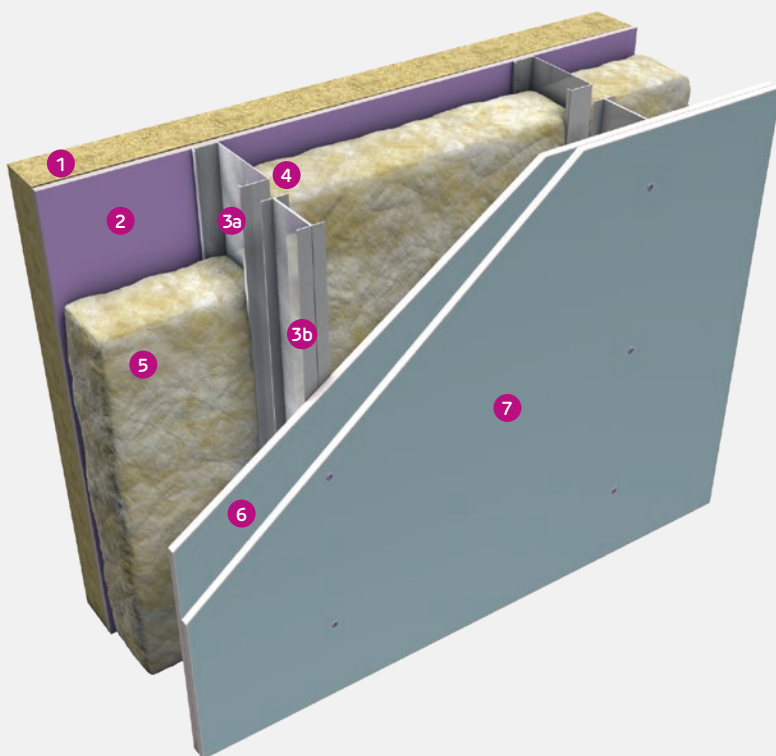
Technical info	
Fire Resistance: to EN 1364-1 (non-load bearing)	EI 120 mins (inside to out) EI 120 mins (outside to in)
Reaction to Fire: to EN 13501-1	All significant components – at least A2 Limited Combustibility Weather Defence™ sheathing – A1 Non-Combustible Stone or glass mineral wool – A1 Non-Combustible
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/m²K      Studs 100x1.2 @ 600mm centres 0.23 W/m²K      Studs 100x1.6 @ 300mm centres 0.17 W/m²K      Studs 150x1.2 @ 600mm centres 0.23 W/m²K      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 stone mineral wool (0.035 W/mK)
- 2 Sheathing:**  
1x 12.5mm Weather Defence™
- 3 Framing:**  
**3a:** Remagin Light steel infill framing  
**3b:** 70/90mm Siniat I-Stud Lining
- 4 Cavity:**  
Varies (min. 10mm)
- 5 Cavity insulation:**  
Partial or full-fill stone or glass mineral wool (0.035 W/mK)
- 6 Internal boards (inner):\***  
1x 12.5mm dB board
- 7 Internal boards (outer):\***  
1x 12.5mm dB board (for standard applications)  
**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

### Technical info

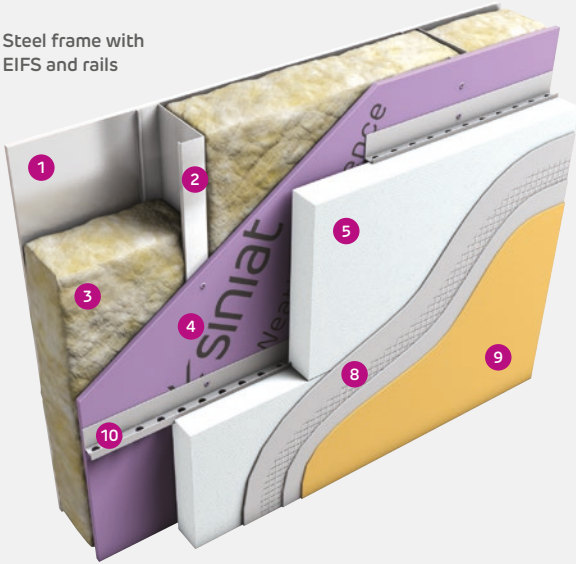
<b>Fire Resistance:</b> to EN 1364-1 (non-load bearing)	EI 60 mins (inside to out) EI 60 mins (outside to in)
<b>Reaction to Fire:</b> to EN 13501-1	All significant components – at least A2 Limited Combustibility Weather Defence™ sheathing – A1 Non-Combustible Stone or glass mineral wool – A1 Non-Combustible
<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/m²K      Studs 100x1.2 @ 600mm centres + I-Stud lining @ 600mm centres 0.23 W/m²K      Studs 100x1.6 @ 300mm centres + I-Stud lining @ 600mm centres 0.17 W/m²K      Studs 150x1.2 @ 600mm centres + I-Stud lining @ 600mm centres 0.22 W/m²K      Studs 150x1.6 @ 300mm centres + I-Stud lining @ 600mm centres

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

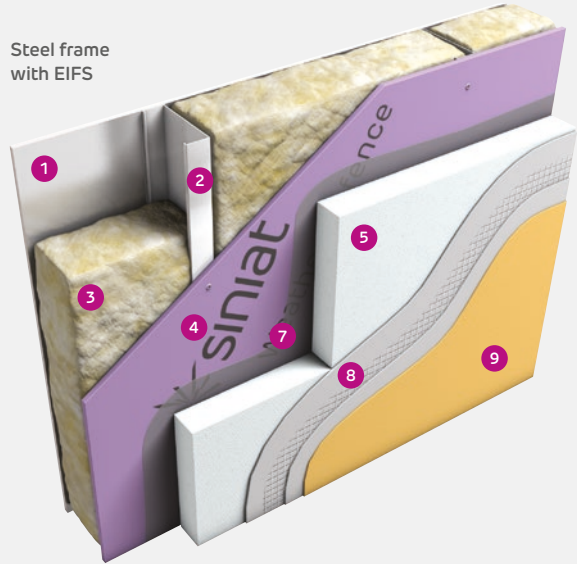
Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

## Typical cladding options

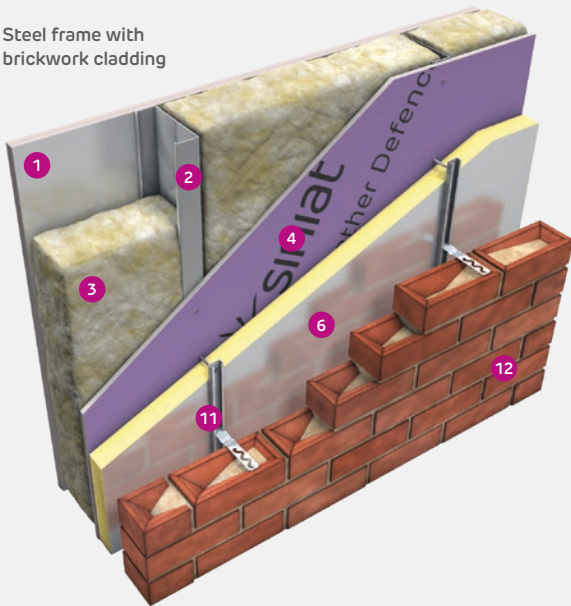
Steel frame with EIFS and rails



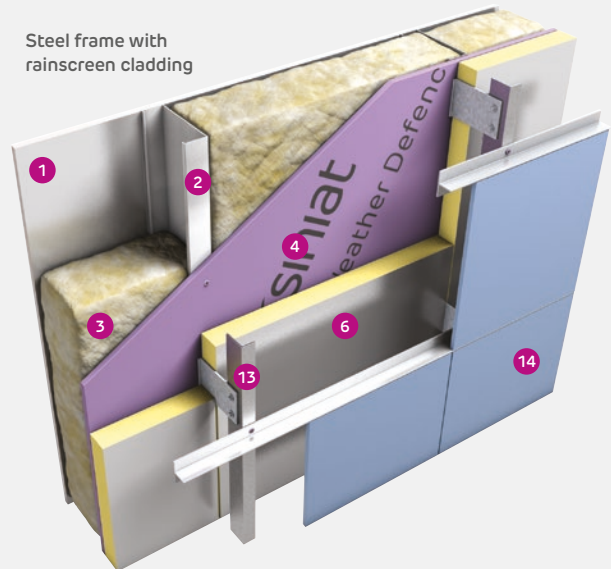
Steel frame with EIFS



Steel frame with brickwork cladding



Steel frame with rainscreen cladding



- 1 Siniat internal board to suit specification
- 2 Remagin steel framing to manufacturer's specification
- 3 Stone 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 sheathing board.

- It can be accurately scored and snapped with a utility 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 weather tightness 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."*

**Design Manager**  
BAM Construction

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

**Site Manager**  
Manorcraft

*"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."*

**Director**  
Elite Cladding Systems

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

**Director**  
Brebur

**installation benefits** (continued)

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 typical cement sheathing 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™ only requires a utility knife.



**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 weather-tight 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 protects the trades from weather during construction to allow for internal work to begin 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.

**Design Manager**  
Graham Construction

# case study

CASE STUDY: Dolphin School

**The Dolphin School is a BAM Construction project for a major extension to create a 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 so many neighbouring proximities around here, we obviously have noise and dust considerations to think about."*

**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."*

*"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 board. It can be trial and error. With Weather Defence™ — as it is like an internal plaster board — we can use a padsaw, a rasp, or just a normal saw to form the angle as neatly as this one."*

**Trainee Site Manager**  
Optimum Drywall Systems Ltd



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

Sector: **Education**

Architect: **AWW Architects**

Contractor: **BAM**

Subcontractor: **Optimum Drywall Systems Ltd**

# engineering detail

## 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:**

- Achieved 0.002 m<sup>3</sup>/m<sup>2</sup>/hr, a negligible flow of air, when tested for air permeability to EN 12114.

**Humid movement:**

- Achieved maximum expansion of just 0.11mm per m (0.011%), from 65% to 85% relative humidity, typical of the British climate. Moisture expansion tests were conducted to EN 318.



Ask us for our **Condensation Risk Assessment Report**

Siniat Weather Defence™ board provided an effective primary air-seal for the building envelope on a number of schools, which achieved less than 1.5m<sup>3</sup>/(Hr.m<sup>2</sup>) at 50 Pascal.

**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 (according to BS EN ISO 12572:2001).

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:

When tested to EN13859-2 for prevention of water penetration, It achieved class W1 – the highest level for water resistance – 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.

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.

Abercynon Primary School, South Wales

## engineering detail (continued)

### How it controls fire above 11m

#### Fire:

- Weather Defence™ is a non-combustible, Euroclass A1 rated sheathing board
- The gypsum core locks moisture into the crystal structure of the gypsum material, which suppresses temperatures when released 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 13501-1:2018
- Achieved Euroclass A1
- Fully non-combustible.

#### Fire resistance testing:

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

#### Façades exceeding 11m in height:

- As a non-combustible board, Weather Defence™ is immediately compliant with Approved Document B (Fire) for façades exceeding 11m.

Please contact our technical services team for more information:

☎ **0800 145 6033**

✉ **technical@siniat.co.uk**



### 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.

**FSi Promat**

Contact FSI Promat for cavity barrier solutions





GRAHAM  
CONSTRUCTION



GRAHAM  
CONSTRUCTION

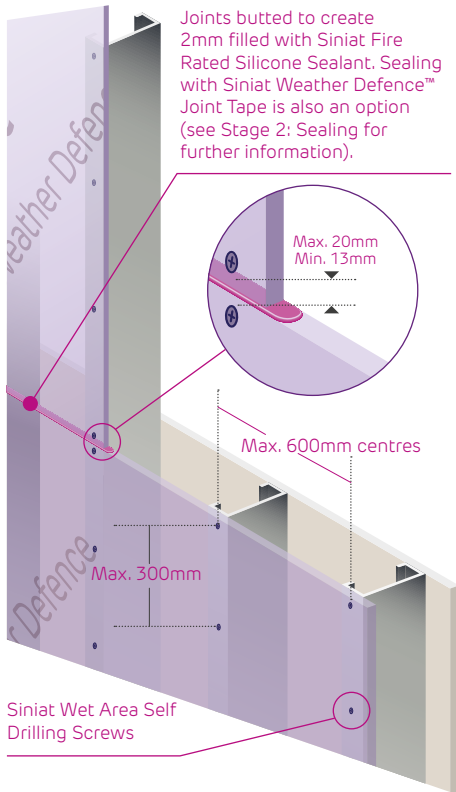
Recent Siniat Weather Defence™ project:  
University of Salford

# installation Guide

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

Install boards horizontally in a staggered 'brick bond' pattern, and only in the vertical plane so that the board can shed water.

Figure 1 Typical board fixing with Siniat 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 a steel substrate, see Fig 1, above.

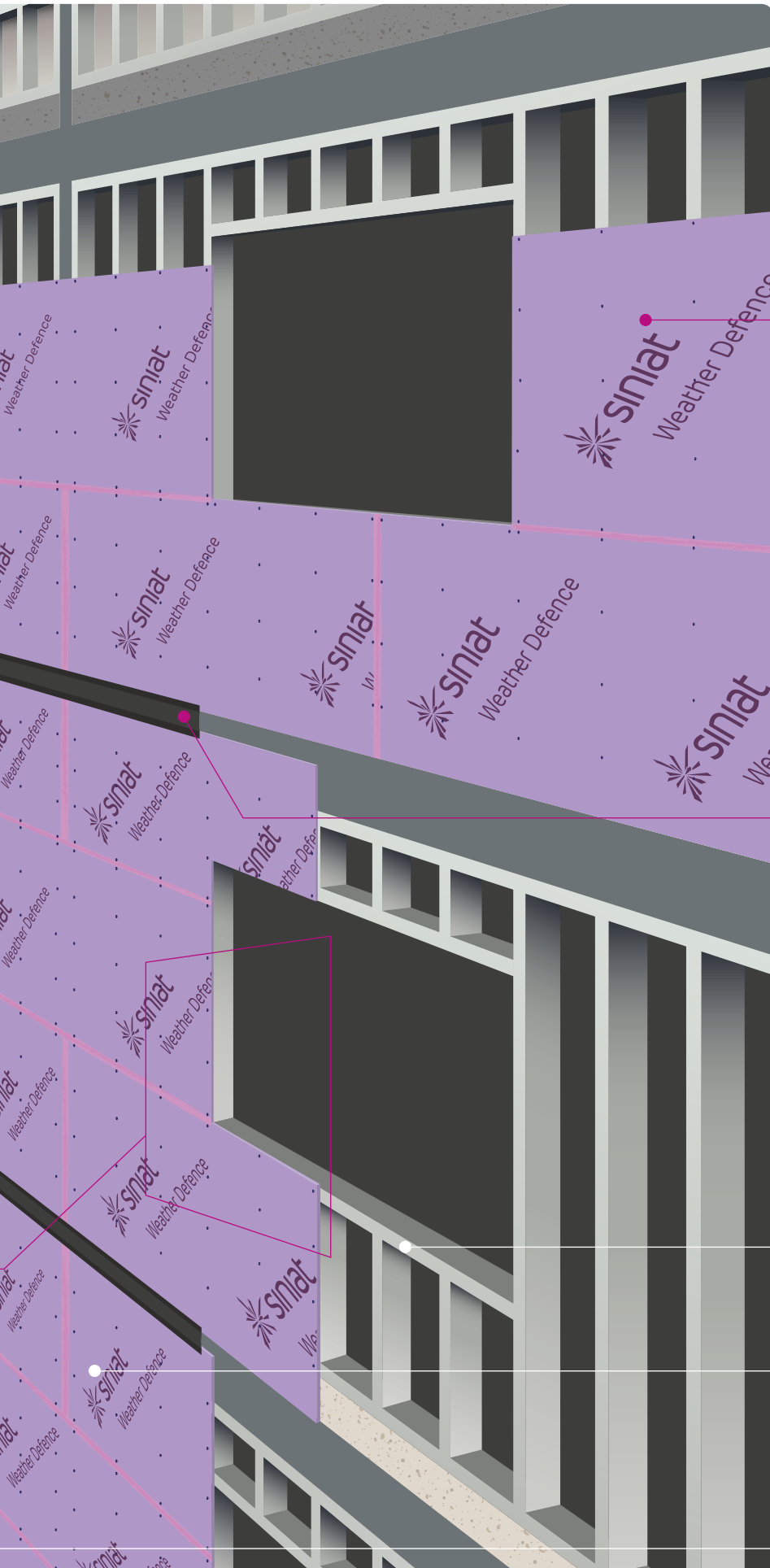
Fix to studs at a maximum 300mm centres (or narrower if required for wind loadings, see Table 1, top right).

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

Remagin, 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 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** (continued)

**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 Strap 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 Wet Area Self Drilling screws at maximum 300mm centres
- Siniat Fire Rated Silicone Sealant or Weather Defence™ Joint Tape used to seal joints, see opposite.

**Stage 2: Sealing**

**Which sealing option:**

- Siniat Fire Rated Silicone Sealant provides a robust weather seal as it allows two boards to be squeezed together, which limits the opportunity for water and air leakages
- For fire resistance: use Siniat 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.

**Applying sealant:**

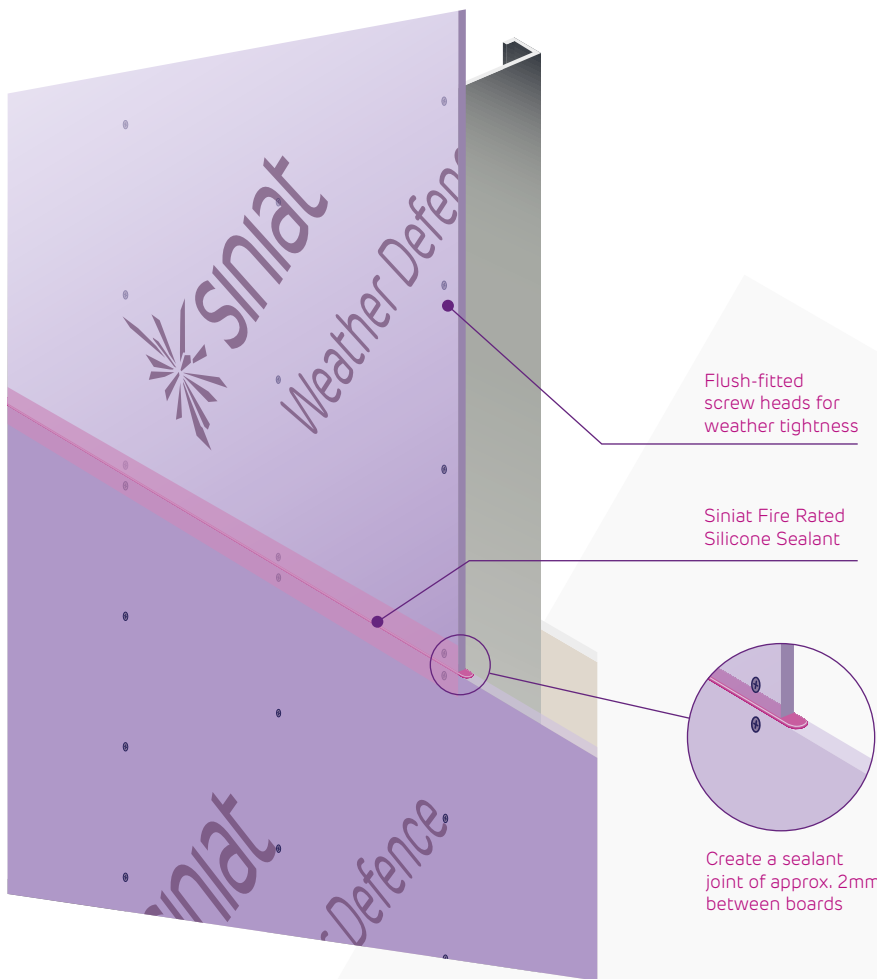
- Apply sealant as boarding progresses, along the previously fixed board edge prior to installation of the next board
- Apply sufficient sealant to create a sealant joint of approx. 2mm when the next board is loosely butted
- Any gaps in the sealant should be filled with additional sealant
- Flush-fitted 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 water tightness 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 stone mineral wool may be required to maintain fire resistance at movement joints and in cavities.

**Table 2** Sealing capability

Joint sealing method	LEVEL OF SEALING REQUIRED		
	Air	Acoustic	Fire
Siniat 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 in the meantime
- 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 (continued)

### 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.

### 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.

#### Insulation Fixing:

- Both dense mineral wool and rigid foam sheet insulation are suitable for use with Weather Defence™. As per approved document B, above 11m high, only non-combustible insulation can be used with Weather Defence™. **See page 22 for additional information**
- 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.

#### 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 0.6m 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 (continued)

Table 3 Insulation fastener categories

Fixing category	Substrate	Minimum load resistance	Purpose of insulation fixing	Examples
Category A	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>Spit Isomet CC</li> </ul>
Category 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)

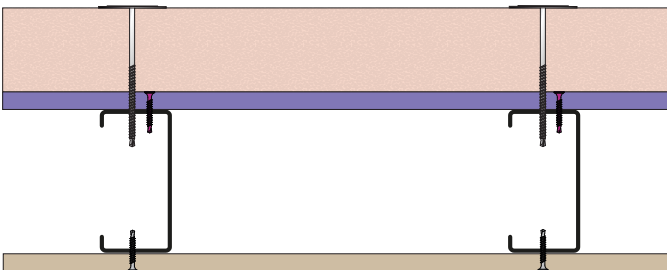


Figure 3 Typical fixing pattern (1.2 x 0.6m insulation board) up to 1.5kN/m<sup>2</sup> characteristic wind load (See Table 3 for fixing types)

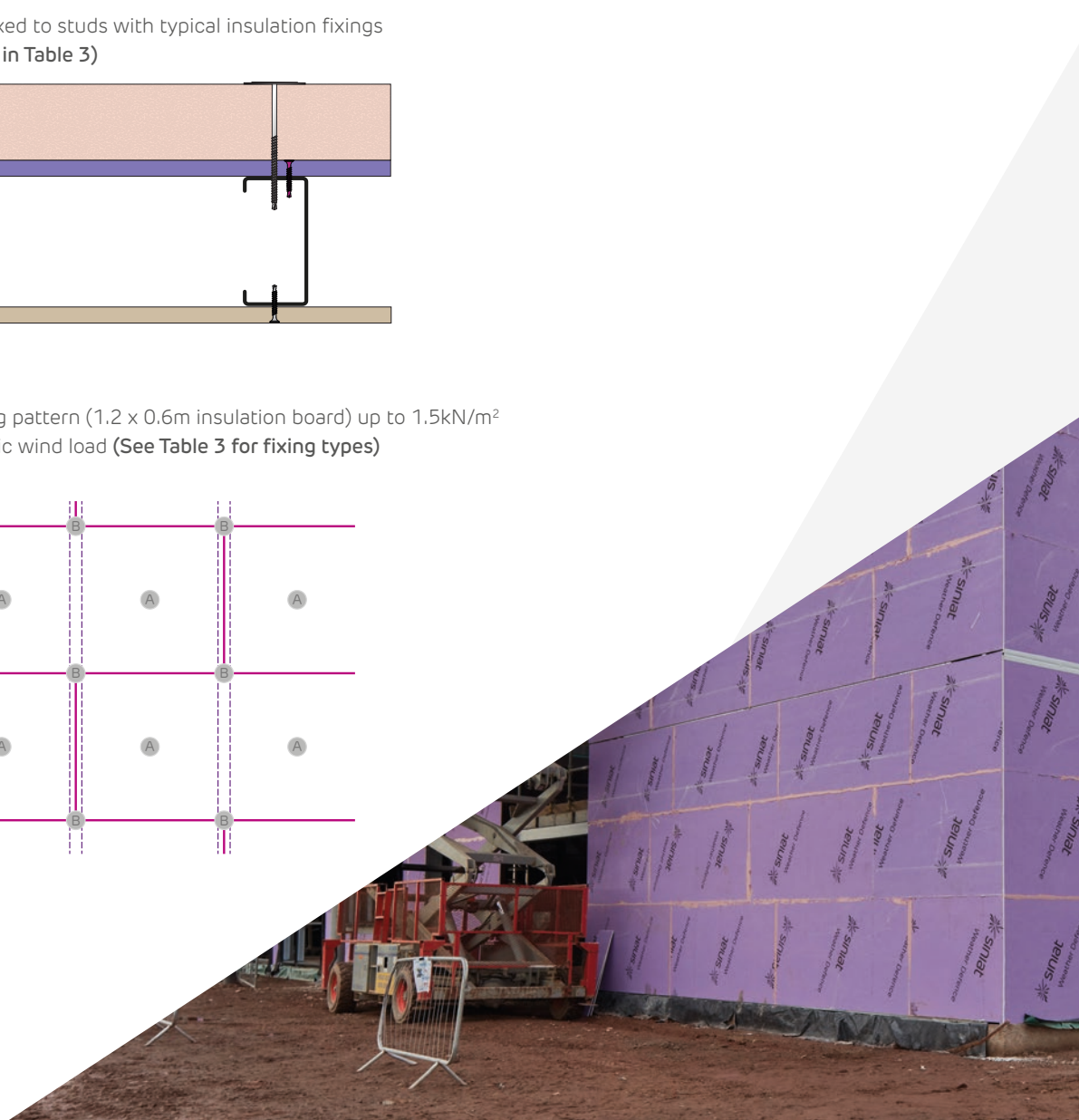
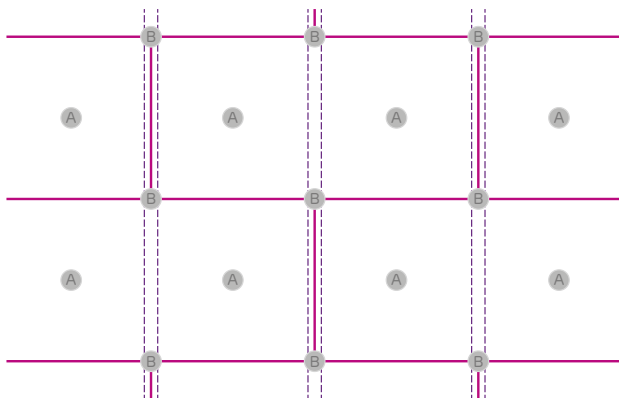
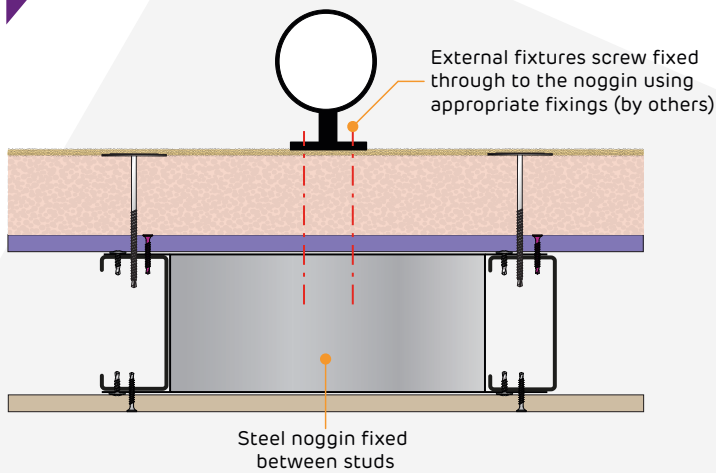


Figure 4 Lightweight Fixtures attached to Weather Defence™



## 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@siniat.co.uk](mailto:technical@siniat.co.uk) or from fixing suppliers who will conduct testing and fixing selection specific to the site.



## Technical characteristics

Type	Description	Performance Values	Units	Evidence
<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	BBA Test Report 57983 Issue 4
	Flexural strength transverse direction according to BS EN 520:2004	<b>310</b>	N	BBA Test Report 57983 Issue 4
	Impact resistance according to BS EN 15283-1:2008	<b>GM-I</b>	Type	
	Compressive strength	<b>9</b>	N/mm <sup>2</sup>	
<b>Fire</b>	Reaction to fire - BS EN 13501-1 : 2018 (UKAB 2822 )	<b>A1</b>		Efectis Class. Report: EUI-24-000603
	Reaction to fire - EN 13501-1+A1 : 2013 (NB 0071)	<b>A1</b>		LNE Class. Report No: P144464
<b>Thermal</b>	Thermal conductivity according to BS EN 12667:2001	<b>0.25</b>	W/mK	BBA Test Report 58631THA Issue 2
	Thermal resistance (12.5mm board)	<b>0.05</b>	m <sup>2</sup> .K/W	BBA Test Report 58631THA Issue 2
<b>Permeability</b>	Water vapour resistance (12.5mm board) according to BS EN 150 12572:2001	<b>0.49</b>	MNs/g	BBA Test Report No. 57983 Issue 4
	Water vapour resistance factor (μ) according to BS EN 150 12572:2001	<b>8</b>		BBA Test Report No. 57983 Issue 4
<b>Moisture resistance</b>	Water uptake (2hrs immersion) according to EN 520:2005	<b>&lt; 3</b>	%	VHT Test Report PB-799-15
	Surface water absorption (2hrs Cobb test) according to EN 520:2005	<b>&lt; 100</b>	g/m <sup>2</sup>	VHT Test Report PB-799-15
	Dimensional change (20°C/30%-65%RH), longitudinal direction dimensional stability according to BS EN 318:2002	<b>0.09</b>	mm/m	VHT Test Report PB-799-15
	Dimensional change (20°C/65%-85%RH), longitudinal direction dimensional stability according to BS EN 318:2002	<b>0.11</b>	mm/m	VHT Test Report PB-799-15
	Dimensional change (20°C/30%-65%RH), transverse direction dimensional stability according to BS EN 318:2002	<b>0.09</b>	mm/m	VHT Test Report PB-799-15
	Dimensional change (20°C/65%-85%RH), transverse direction dimensional stability according to BS EN 318:2002	<b>0.05</b>	mm/m	VHT Test Report PB-799-15
<b>Mould resistance</b>	Resistance to mould growth according to ASTM 03273	<b>10/10</b>	No mould growth	CONIDIA Test Report 1013-010_1
<b>Pull-through resistance (with 3x safety factor)</b>	Pull-through resistance (23°C /50%RH), Siniat Wet Area High Thread fixing according to EN 1383	<b>0.31</b>	kN	BBA Test Report 57983 Issue 4
	Pull-through resistance (23°C /50%RH), Siniat Wet Area Self Drilling fixings according to EN 1383	<b>0.33</b>	kN	BBA Test Report 57983 Issue 4
	Pull-through resistance (23°C /50%RH), Siniat Wet Area Self Tapping fixings according to EN 1383	<b>0.25</b>	kN	BBA Test Report 57983 Issue 4
<b>Shear strength</b>	Shear resistance according EN 520	<b>0.88</b>	kN/ Screw	VHT Test Report PB-791-15



## Our technical support for your next project

Our Architectural Specification Managers and Technical Services Teams are on hand to help you select the right solutions for your project.

By contacting us during the design phase we can evaluate all of a project's technical requirements and influencing factors such as the building's location and orientation.

We will provide you with a custom designed Project Pack showing the details and performance of your Weather Defence™ System.

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

☎️ 01275 377 789 or 0800 145 6033



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