



WEATHER DEFENCE

The revolutionary
external sheathing board





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PRODUCT OVERVIEW



Featured Project:

South Devon University
 Technical College, Newton Abbot

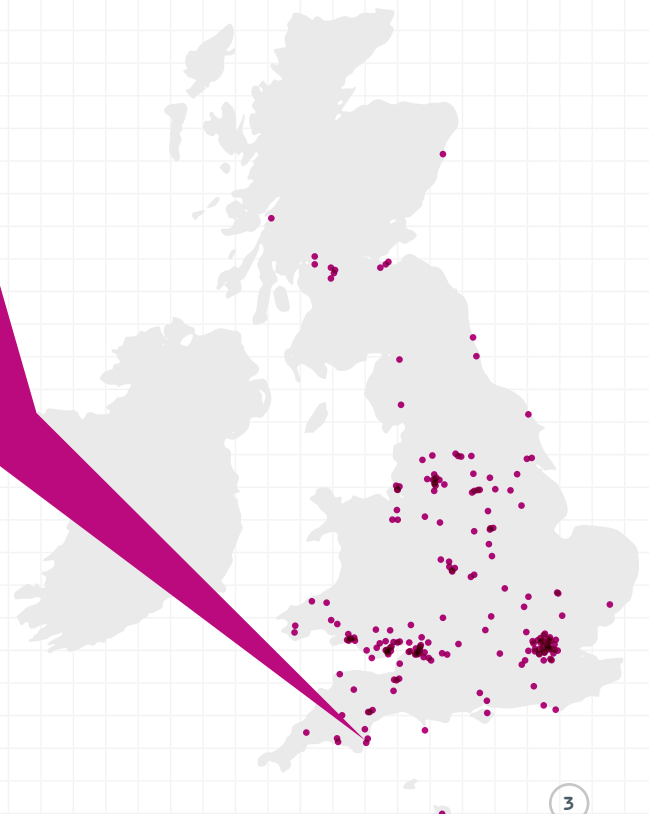
The area's first University Technical College, offers learning opportunities for 600 young people between 14-18. The college will specialise in water, engineering and the environment. The four storey 4700m² facility with a full height atrium is also the first rural UTC to be constructed. With innovation and sustainability key to the features and build process, Weather Defence, which has a fully recyclable gypsum core was chosen for the frame based construction methods, to provide a faster way to weathertight and airtight the building.

- Sector:** Education
- Project value:** £10.5M
- Client:** South Devon UTC
- Architect:** Stride Treglown
- Contractor:** BAM Construction Ltd
- Sub-contractor:** External: Korbuild
- Siniat innovations:** Weather Defence
- Finished:** December 2015

Weather Defence is an external sheathing board which has transformed building envelope construction and performance. Weather Defence is made from gypsum and has a patented hydrophobic core and water resistant liner – and is a replacement for cement particle boards.

It is being used on hundreds of projects throughout the UK because its benefits have proved too many for designers and installers to ignore.

Specified by 45% of AJ100 British Architects, on over 350 projects throughout the UK



DESIGN BENEFITS

An innovative, lightweight technology

We understand that your default choice of sheathing material may well be a cement particle board.

External sheathing options have evolved, and in contrast Weather Defence is an innovative, lightweight board.

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.

It is designed for:

- Steel frame systems
- Timber frame structures
- Steel infill panels

Cement Particle



Northumbria Specialist Emergency Care Hospital

Weather Defence



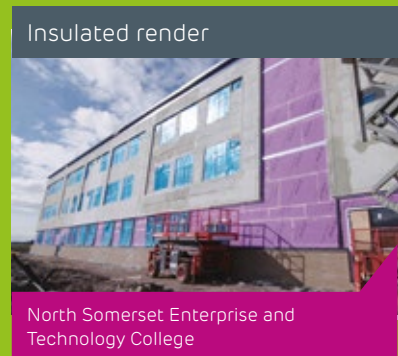
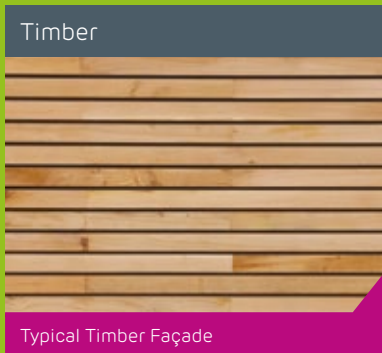
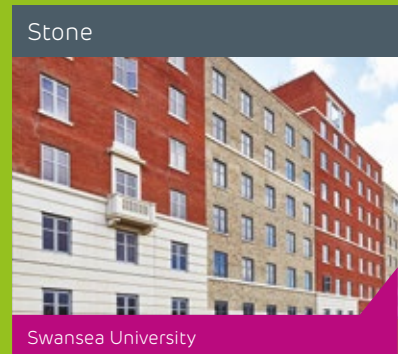
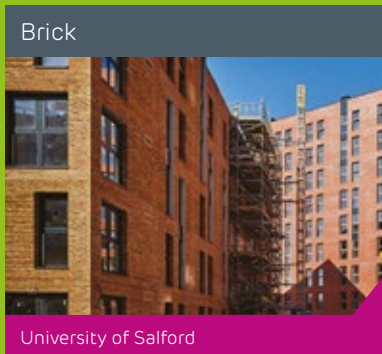
Swansea Bay Campus

Suitable for most façades

Weather Defence is a versatile sheathing board which can be used under the following façades in any sector:

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

BCIA Judging Panel



DESIGN BENEFITS

Sustainability: It's sustainable, traceable and recyclable

Weather Defence:

- Is manufactured by Siniat in either Bristol or France
- Is recyclable
- Has a BREEAM 'Very good' rating
- CE marked to EN 15283-1

Most cement particle boards are not recyclable, nor responsibly sourced. They are typically made by a third party manufacturer in China 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”

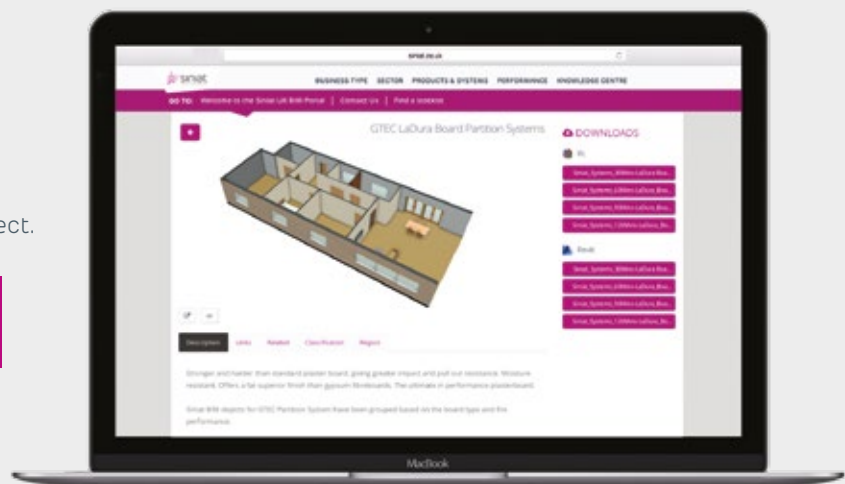
Vernon Hailwood, Design Manager,
Graham Construction (University of Salford Project)

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



Bespoke detailing

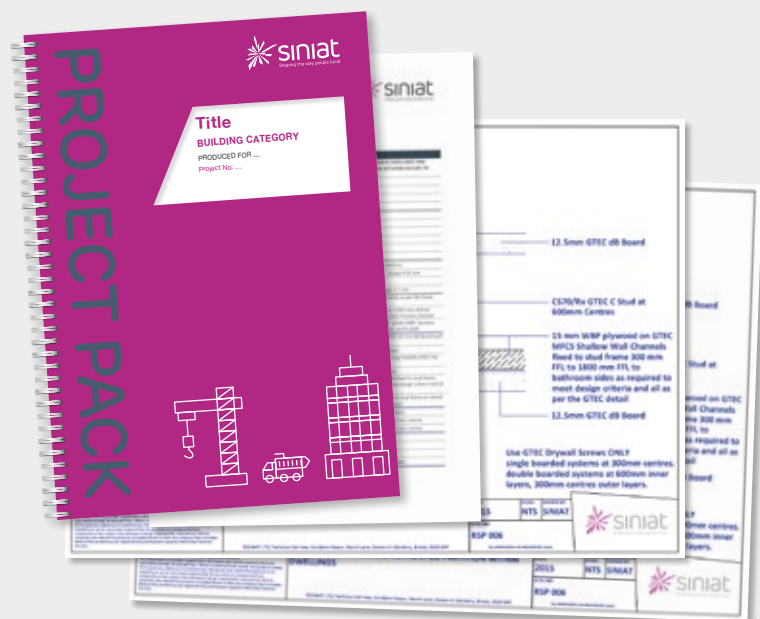
If you would like us to do the detail for you, our Technical Support team are Weather Defence experts and are happy to help.



0800 145 6033



technical.services@siniat.co.uk



SYSTEM PERFORMANCE

Gypsum technology is at the heart of Weather Defence's system performance; It's unique characteristics offer excellent fire performance, air leakage and high sound insulation.

Combined with our range of internal boards, the system can achieve outstanding through-wall performance delivering safe and comfortable buildings.



Cladding system performance

Our system performances are independent of external cladding. In most instances, cladding will not negatively impact system performance. Seek advice from the cladding supplier to identify any potential issues.



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.

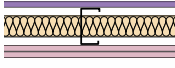
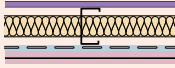
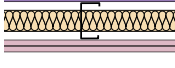
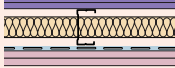
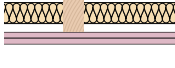
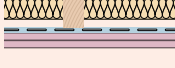


Acoustic performance

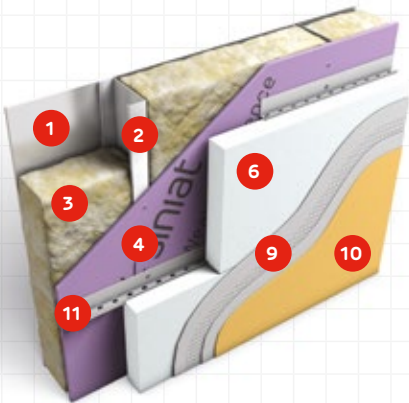
Acoustic insulation can be enhanced by:

- Choice of cladding
- Addition of further boards
- Separating internal boards from the structural frame using a GTEC Resilient Bar (most effective)

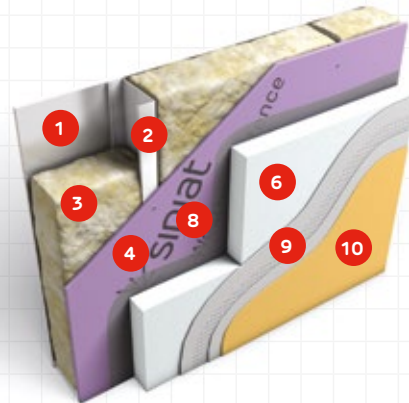
SYSTEM	COMPONENTS	Loadbearing fire resistance to BS 476-21 or EN 1365-1	Non-loadbearing fire resistance to BS 476-22 or EN 1364-1	Acoustic performance R _w dB	THERMAL PERFORMANCE	STRUCTURAL STRENGTH
	<p>Sheathing board(s) 1 x 12.5mm Weather Defence</p> <p>Frame Steel, min. 100mm x 35mm x 1.2mm</p> <p>Internal board(s) 1 x 12.5mm Megadeco/Fire/LaDura/Aqua Board</p> <p>Insulation 50mm 45kg/m³ rock mineral wool</p>	30 mins both directions REI30, both directions	60 mins both directions EI60, both directions	42	Excellent U-values can be achieved (0.15W/m ² K or better)	To be determined by frame supplier
	<p>Sheathing board(s) 1 x 12.5mm Weather Defence</p> <p>Frame Steel, min. 100mm x 35mm x 1.2mm</p> <p>Internal board(s) 1 x 15mm Megadeco/Fire/LaDura/Aqua Board</p> <p>Insulation 50mm 45kg/m³ rock mineral wool</p>	60 mins both directions REI30, both directions	60 mins both directions EI60, both directions	43	Excellent U-values can be achieved (0.15W/m ² K or better)	To be determined by frame supplier
	<p>Sheathing board(s) 1 x 12.5mm Weather Defence</p> <p>Frame Steel, min. 100mm x 35mm x 1.2mm</p> <p>Accessories Resilient bar</p> <p>Internal board(s) 1 x 15mm Megadeco/Fire/LaDura/Aqua Board</p> <p>Insulation 50mm 45kg/m³ rock mineral wool</p>	30 mins both directions REI30, both directions	60 mins both directions EI60, both directions	50	Excellent U-values can be achieved (0.15W/m ² K or better)	To be determined by frame supplier

SYSTEM	COMPONENTS	Loadbearing fire resistance to BS 476-21 or EN 1365-1	Non-loadbearing fire resistance to BS 476-22 or EN 1364-1	Acoustic performance R _w dB	THERMAL PERFORMANCE	STRUCTURAL STRENGTH
	<p>Sheathing board(s) 1 x 12.5mm Weather Defence</p> <p>Frame Steel, min. 100mm x 35mm x 1.2mm</p> <p>Internal board(s) 2 x 15mm Megadeco/Fire/ LaDura/Aqua Board</p> <p>Insulation 50mm 45kg/m³ rock mineral wool</p>	60 mins both directions REI30, both directions	90 mins both directions EI90, both directions	47	Excellent U-values can be achieved (0.15W/m ² K or better)	To be determined by frame supplier
	<p>Sheathing board(s) 1 x 12.5mm Weather Defence</p> <p>Frame Steel, min. 100mm x 35mm x 1.2mm</p> <p>Internal board(s) 2 x 12.5mm Megadeco/Fire/ LaDura/Aqua Board</p> <p>Accessories Resilient bar</p> <p>Insulation 50mm 45kg/m³ rock mineral wool</p>	30 mins both directions REI30, both directions	90 mins both directions EI90, both directions	55	Excellent U-values can be achieved (0.15W/m ² K or better)	To be determined by frame supplier
	<p>Sheathing board(s) 1 x 12.5mm Weather Defence</p> <p>Frame Steel, min. 100mm x 35mm x 1.2mm</p> <p>Internal board(s) 2 x 15mm Megadeco/Fire/ LaDura/Aqua Board</p> <p>Insulation 50mm 45kg/m³ rock mineral wool</p>	60 mins both directions REI30, both directions	120 mins both directions EI90, both directions	48	Excellent U-values can be achieved (0.15W/m ² K or better)	To be determined by frame supplier
	<p>Sheathing board(s) 2 x 12.5mm Weather Defence</p> <p>Frame Steel, min. 100mm x 35mm x 1.2mm</p> <p>Internal board(s) 2 x 15mm Megadeco/Fire/ LaDura/Aqua Board</p> <p>Accessories Resilient bar</p> <p>Insulation 50mm 45kg/m³ rock mineral wool</p>	N/A	120 mins both directions EI120, both directions	58	Excellent U-values can be achieved (0.15W/m ² K or better)	To be determined by frame supplier
	<p>Sheathing board(s) 1 x 12.5mm Weather Defence</p> <p>Frame Timber, min. 140mm x 38mm</p> <p>Internal board(s) 2 x 12.5mm Megadeco/Fire/ LaDura/Aqua Board</p> <p>Insulation 50mm 45kg/m³ rock mineral wool</p>	60 mins both directions REI60, both directions	N/A	45	Excellent U-values can be achieved (0.15W/m ² K or better)	To be determined by frame supplier
	<p>Sheathing board(s) 1 x 12.5mm Weather Defence</p> <p>Frame Steel, min. 100mm x 35mm x 1.2mm</p> <p>Internal board(s) 2 x 12.5mm Megadeco/Fire/ LaDura/Aqua Board</p> <p>Accessories Resilient bar</p> <p>Insulation 50mm 45kg/m³ rock mineral wool</p>	60 mins both directions REI60, both directions	N/A	56	Excellent U-values can be achieved (0.15W/m ² K or better)	To be determined by frame supplier

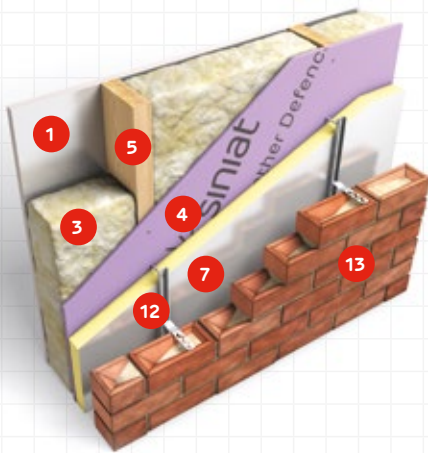
TYPICAL SYSTEM CONSTRUCTION DETAILS



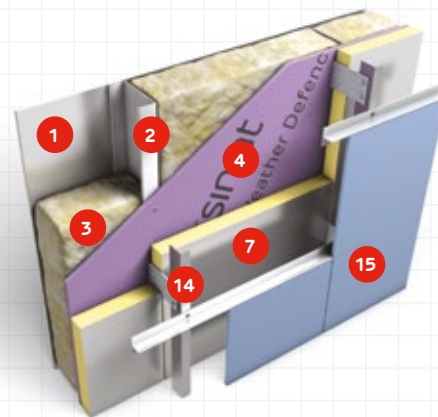
Steel frame with EIFS and rails



Steel frame with EIFS



Timber frame with brickwork cladding



Steel frame with rainscreen cladding

- | | | |
|--|--|--|
| 1 Siniat Internal Board to suit specification | 6 Insulation for EIFS system fixed to framing | 12 Brick tie system to manufacturer's guidelines |
| 2 Steel frame to manufacturer's specification | 7 Additional cavity insulation | 13 Brickwork cladding |
| 3 Rock Mineral wool insulation to meet specification | 8 Insulation fixed to board with adhesive | 14 Rainscreen support rail system to manufacturer's guidelines |
| 4 Weather Defence external sheathing board | 9 Render reinforcement mesh and adhesive | 15 Rainscreen cladding to suit specification |
| 5 Timber frame to manufacturer's specification | 10 Render finish | |
| | 11 Insulation support rail fixed back to frame | |

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

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, 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."

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 & safety benefits

Why use Weather Defence?

Weight

Weather Defence weighs 10.8 kg/m² 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.



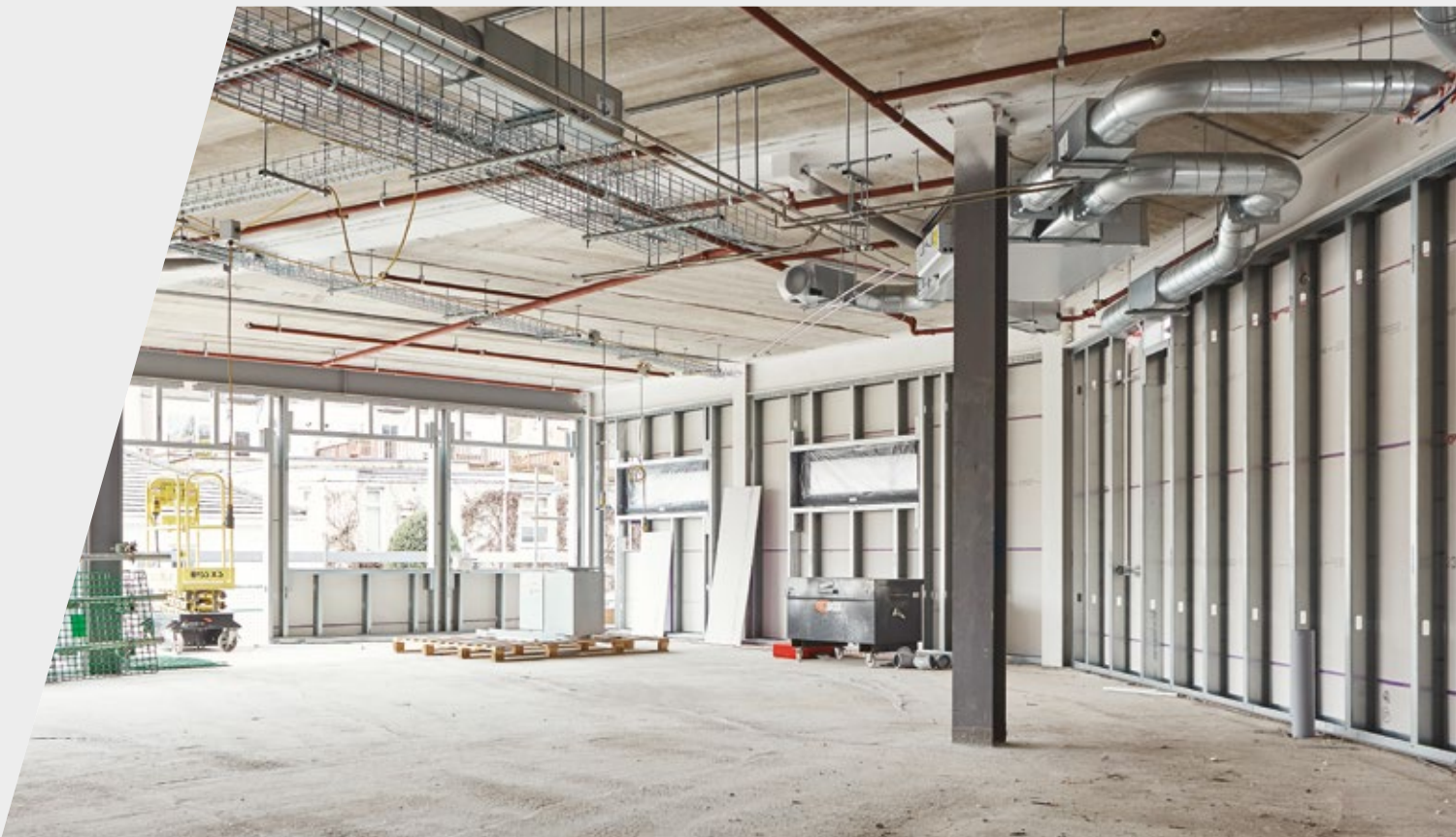
Making the building weathertight to improve the project's Critical Path

You can make the building watertight for internal trades

Weather Defence is water, weather and mould resistant and can be left exposed on frame for up to three months. It makes the building 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, where as 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

PROJECT	SECTOR:	ARCHITECT:	MAIN CONTRACTOR:	SUB CONTRACTOR:
The Dolphin School, Bristol	Education	AWW Architects	BAM	Optimum Drywall Systems Ltd



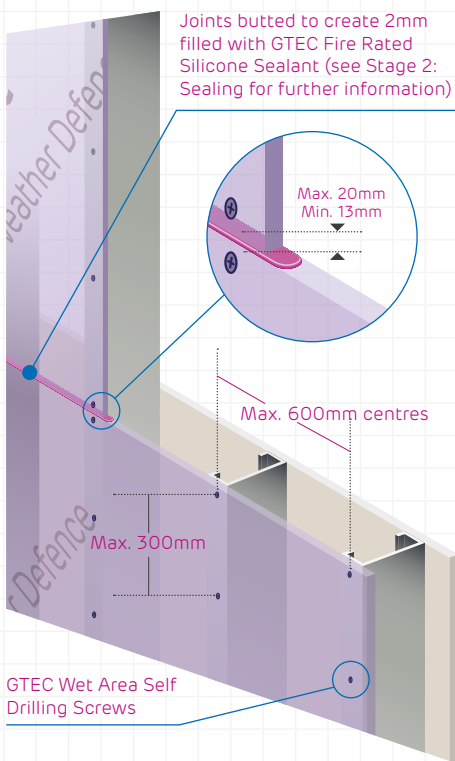
Dolphin School

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

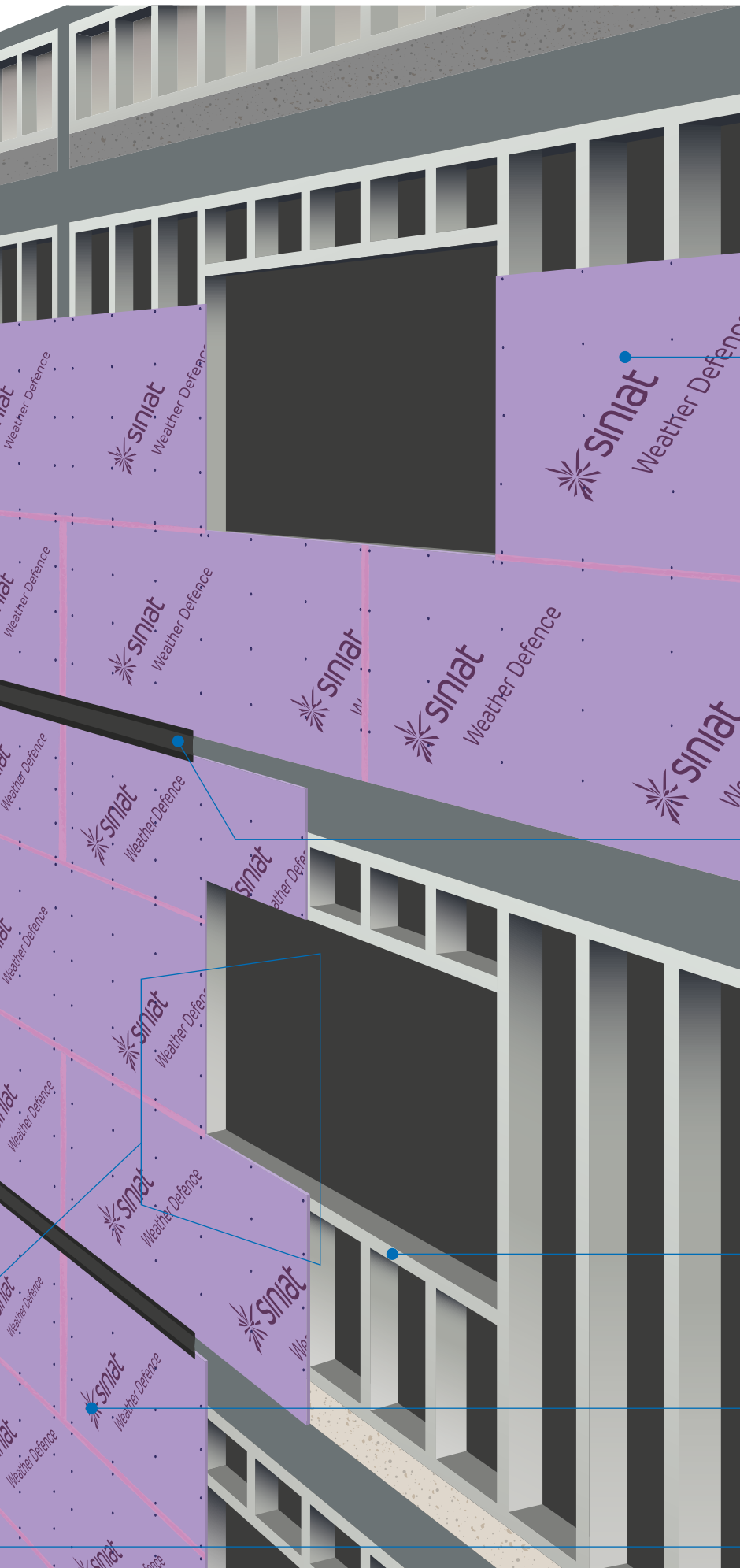


Locate screws at least 13mm and no more than 20mm from board edges and penetrate at least 10mm into the substrate, see Fig 1, above.

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).

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 ²)
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 150mm above dpc level.

INSTALLATION GUIDE

Stage 2: Sealing

Which sealant to use:

- Silicone sealants provide 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 GTEC Fire Rated Silicone Sealant where fire resistance of 30 minutes or above is required
- For acoustic performance: silicone sealant will form a superior acoustic seal between boards in comparison with tapes
- Sealing tapes (by others, and approved for use with Weather Defence by manufacturer and Siniat) 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

Applying sealant:

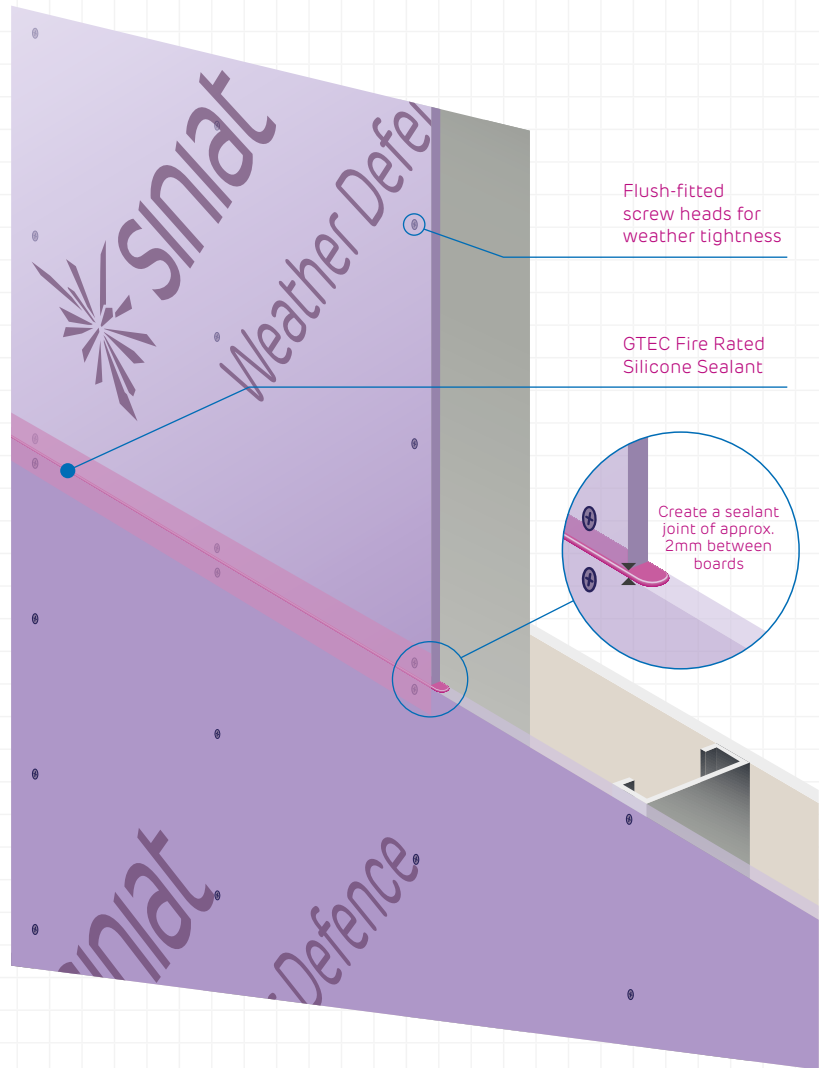
- Apply sealant as boarding progresses along the previously fixed board edge prior to installation of the next board
- Apply sufficient sealant to create a sealant joint of approx. 2mm when the next board is loosely butted
- Any gaps in the sealant should be filled with additional sealant
- Flush-fitted screw heads are weathertight. Sealing with a dab of sealant will prevent issues where a screw is not perfectly flat

Table 2 Sealing capability

Joint sealing method	LEVEL OF SEALING REQUIRED			
	Air	Rain	Acoustic	Fire
Joint Silicone Sealant	●	●	●	○
GTEC Fire Rated Silicone Sealant	●	●	●	●
Approved tapes	●	●	○	○

- 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 (e.g. Tremco Illbruck), 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 performance, fire resistance, weather resistance, airtightness and any 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



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
- 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



Boards stored on-site

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

Insulation Fixing:

- Both dense mineral wool and rigid foam sheet insulation are suitable for use with Weather Defence. *Please see Fire section on page 28 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

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 below), 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)
- Figure 5, overleaf, shows typical fixing patterns with fasteners shared between adjoining 1.2 x 0.6 m insulation panels to achieve 1.5 kN/m² 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



Table 3 Insulation fastener categories

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

INSTALLATION GUIDE

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

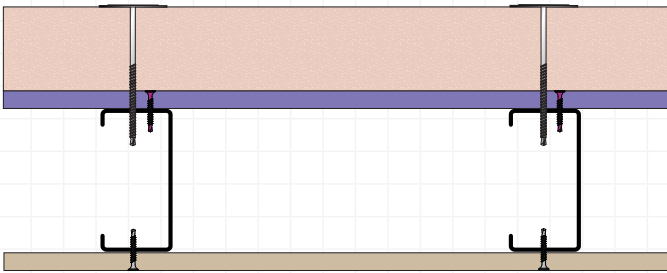
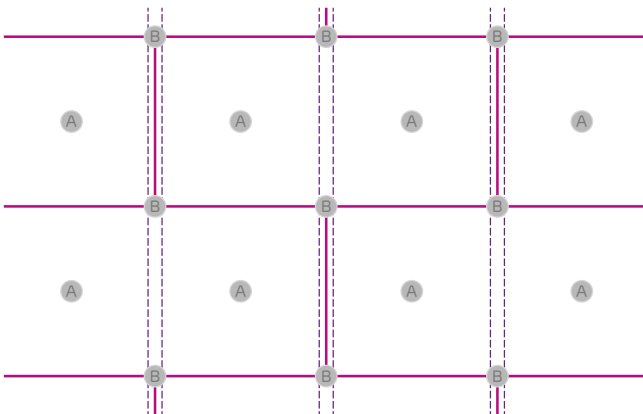


Figure 3 Typical fixing pattern (1.2 x 0.6m insulation board) up to 1.5kN/m² characteristic wind load (See Table 3 for fixing types)



Cladding and Rainscreen Fixing:

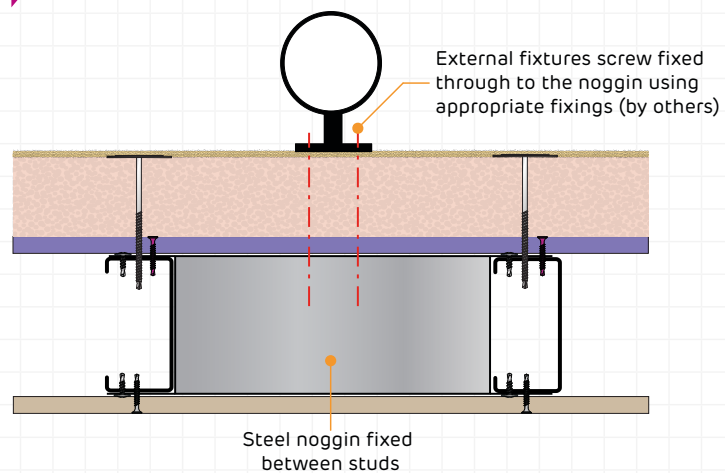
- All cladding loads must be directly supported by the structural frame and not carried by the Siniat Weather Defence Board. Weather Defence may act as an intermediate layer provided the cladding fixings are attached to the frame through the board
- Bearing pressure on Weather Defence from brackets must not exceed 2.5N/mm^2 . 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 or from fixing suppliers who will conduct testing and fixing selection specific to the site

Figure 4

Lightweight Fixtures attached to Weather Defence



ENGINEERING WEATHER DEFENCE

Creating an airtight envelope

How it creates an airtight envelope:

- Weather Defence can dramatically reduce air leakage
- This is because it is easily manipulated to form tight, clean and airtight junctions around complex details
- It is also extremely stable, and hardly expands or contracts in reaction to weather and humidity
- As a sheathing layer, it forms an extremely large surface area of envelope which can be easily sealed, and is situated away from internal fittings which might penetrate internal linings
- The board and joints consistently exceed airtightness values demanded from Building Regulations and low energy designs

Project test evidence – Abercynon Primary School:

- Project specification for airtightness was $3\text{m}^3/\text{m}^2/\text{hr}$
- Achieved $2\text{m}^3/\text{m}^2/\text{hr}$
- Comfortably exceeded project specification

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

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

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



Abercynon Primary School, South Wales

ENGINEERING WEATHER DEFENCE

Resisting Moisture and Breathing Vapour

How it controls moisture and vapour:

- 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

Humidity tests:

- A range of humidity tests for moisture movement EN318
- Achieved maximum expansion of 0.15mm per m
- From 65% to 90% relative humidity, typical of the British climate

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.

Ask us for our Condensation Risk Assessment Report or download a sample copy from:

www.siniat.co.uk



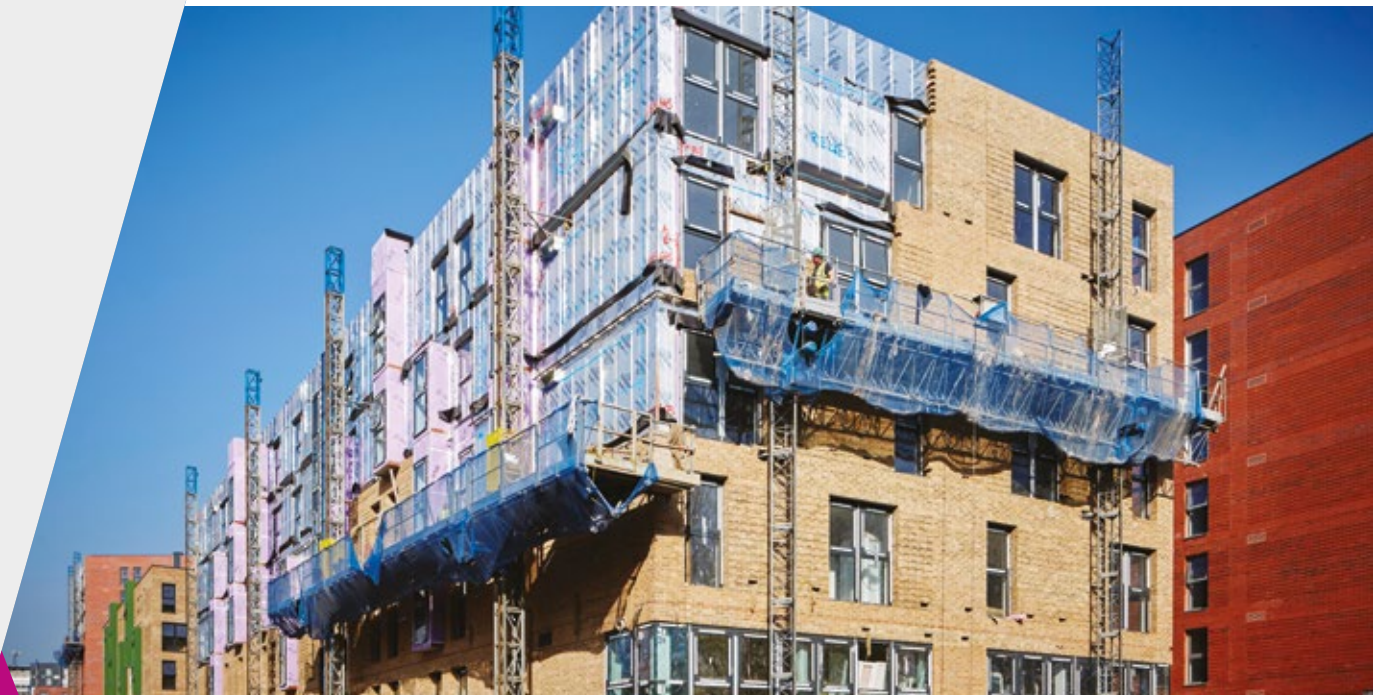
IMPORTANT TO NOTE:

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.

**Water, weather and
mould resistant**
Weather Defence can be
left exposed on site for
up to 3 months.



South Devon, Bradford College and Salford University

ENGINEERING WEATHER DEFENCE

How it controls fire above 18m.

Fire:

- Weather Defence is a fully non-combustible, Euroclass A1 rated sheathing board
- It has a unique composition which 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
- Successfully featured in BR135 in assessments by cladding and insulation suppliers

Reaction to fire test:

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

Fire resistance testing:

- Test conducted to BS 476-21, EN 1364-1 and EN 1365-1
- Achieved 30 to 120 mins fire resistance (see systems detail on pages 8 & 9)

Façades exceeding 18m in height:

- Weather Defence provides immediate compliance with Approved Document B (Fire) for façades exceeding 18m
- It also surpasses Technical Note 18 from the Building Control Alliance, Option 1

Demonstrating:

Technical Note 18: Building Control Alliance (BCA) provides further information for how to demonstrate compliance to Approved Document B. Weather Defence complies with Option 1.

Option 1

The use of materials of (at least) limited combustibility for all elements of the cladding system both above and below 18m. This includes the insulation, internal lining board and external facing material. Smaller gasket parts and similar low risk items can be excluded from this requirement.

Option 2

Evidence of testing in compliance with BR 135.

Option 3

Assessment of compliance to BR 135 by an independent testing body based on appropriate test evidence.

IMPORTANT TO NOTE:

For cladding systems using combustible materials, additional testing or assessment of the cladding may be required.

Fire cavity barriers may be needed within the wall build-up or facade 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.

**Project Specification
for fire performance:**

60 Minutes

System Components

Sheathing board: 1 x
12.5mm Weather Defence

Frame: Steel

Internal boards: 1 x 15mm
Fire/LaDura/Aqua Board

System Performance

Loadbearing fire
resistance BS: 60
Minutes Both Directions

Non-Loadbearing fire
resistance BS:
60 minutes
Both Directions



University of Salford

TECHNICAL CHARACTERISTICS

Type	Description	Performance Values	Units
General	Density	860	kg/m ³
Mechanical properties	Flexural strength longitudinal direction according to BS EN 520:2004	6.5	N/mm ²
	Flexural strength transverse direction according to BS EN 520:2004	5	N/mm ²
	Elastic modulus longitudinal direction according to BS EN 789:2004	3200	MPa
	Elastic modulus transverse direction according to BS EN 789:2004	3220	MPa
	Impact resistance according to BS EN 15283-1:2008	GM-I	
	Compressive strength	7	N/mm ²
Fire	Reaction to fire – Euro class according to BS EN 13501-1:2007	A1	
Thermal	Thermal conductivity according to BS EN 12667:2001	0.19	W/mK
	Thermal resistance (12.5mm board)	0.05	m ² .K/W
Permeability	Water vapour resistance (12.5mm board) according to BS EN ISO 12572:2001	0.77	MNs/g
	Water vapour resistance factor (μ) according to BS EN ISO 12572:2001	12	
Moisture resistance	Water uptake (2 hrs immersion) according to EN 520:2005	< 3	%
	Surface water absorption (2 hrs Cobb test) according to EN 520:2005	< 100	g/m ²
	Dimensional change (20°C/30%-65%RH), longitudinal direction dimensional stability according to BS EN 318:2002	0.10	mm/m
	Dimensional change (20°C/65%-85%RH), longitudinal direction dimensional stability according to BS EN 318:2002	0.15	mm/m
	Dimensional change (20°C/30%-65%RH), transverse direction dimensional stability according to BS EN 318:2002	0.13	mm/m
	Dimensional change (20°C/65%-85%RH), transverse direction dimensional stability according to BS EN 318:2002	0.11	mm/m
Mould resistance	Resistance to mould growth - ASTM O3273	10/10	no mould growth

Waste and recycling

- The gypsum core in Weather Defence is fully recyclable, hence the product and site off-cuts are accepted by the GTEC Wasteline Direct service for the 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 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/m²

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.

Skin: Exposed skin should be kept to a minimum to avoid contact with fibres.

Warranties

Installers can benefit from a 10 year warranty for Weather Defence when built with Siniat components and materials. This must be installed by qualified professionals in accordance with our latest literature and relevant standard. See siniat.co.uk for more details.

Weather Defence delivers on performance


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




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 373636**

 **01275 377700**

 **orderline@siniat.co.uk**

Technical Services Department

Advisory service.

 **0800 145 6033 or 01275 377789**

 **01275 377456**

 **technical.services@siniat.co.uk**

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