siniat
Shaping the way people build

WEATHER DEFENCE AU

The revolutionary external gypsum sheathing board

Brochure Includes Information on;

- Fire Safety In Building Facades
- Eliminating Vapour Permeable Membranes
- Creating An Airtight Layer

12 MONTHS EXPOSURE WARRANTY
siniat

Promat

Promat

PROMAT AUSTRALIA and its sister companies, has been dedicated to provide the highest quality and performance in building materials and solutions.

The well-known expertise in Fire protection and High Performance Insulation has been proved in many projects in Asia Pacific and around the world.

Other building technologies from Etex group complement Promat´s wide portfolio of solutions and one of them is High Performance Gypsum boards. This publication shows the main features and installation guidelines of SINIAT´s Weather Defence, an outstanding external gypsum sheathing board which has been very successful in the European market where SINIAT is the brand of choice for these applications.

You can find all of our case studies in our knowledge centre at: www.promat.com.au

SINIAT, THE NAME BEHIND DRYLINNING INNOVATION

PROMAT´s sister brand, SINIAT manufactures drywall products and systems for partitions, ceilings, wall linings and external sheathing purposes. ... Our products are used in millions of properties across Europe, helping to make homes, schools, hospitals and workplaces warmer, drier, quieter and safer than they have ever been.

Eastern High School, Rumney, Cardiff

PRODUCT OVERVIEW

Weather Defence is an award-winning external sheathing board which is used behind facade cladding systems to create a pressure equalised cavity. It has transformed building envelope construction and performance.

The design benefits it brings include:

- It is compliant for use in building facades in Type A & B construction
- It achieves outstanding airtightness
- It is easy to cut and shape, offering more options for design detailing
- Responsibly sourced and eligible for credits under BREEAM
- It is up to 50% quicker to install than cement based boards or metal sheets
- It makes the building watertight for internal trades, reducing the construction cycle
- 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 compliant and fire rated rigid air barrier which has been rigorously tested and proven in Europe and the Nordics, as a suitable alternative to cement based sheathing boards.

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

Winner of the Global Gypsum Product of the Year at the 2017 Global Gypsum Awards.

It's time to rethink your choice of external rigid air barriers and back pan material.

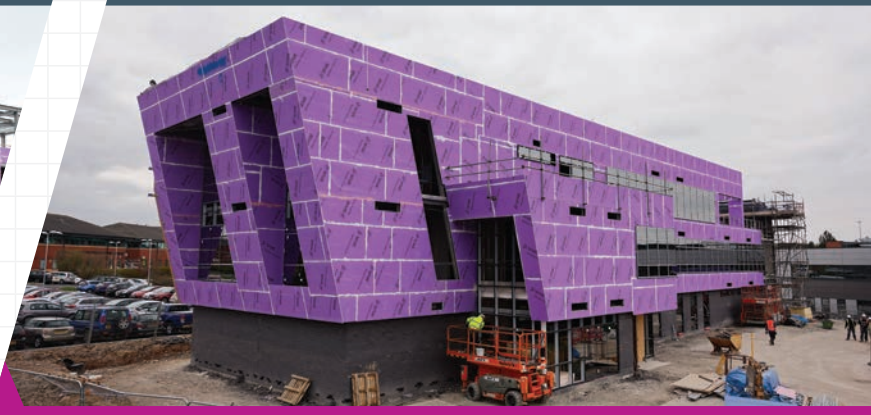
Weather Defence is designed to be installed on:

- 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

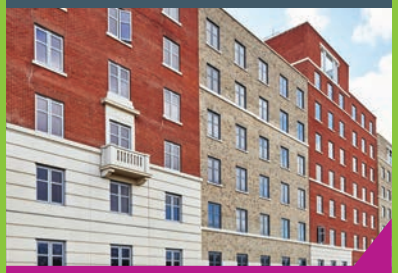
"...a really simple product that could very quickly become the major player in the market"

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:

- Has a fully recyclable core
- Has a BREEAM 'Very Good' rating

Manufactured under quality assurance standards ISO9001, 14001 & 18001. Most cement boards are not recyclable.

University of Salford – Student Accommodation

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

"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

INSTALLATION BENEFITS

Why Weather Defence is significantly quicker to install than cement based boards or metal sheeting

- 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 sarking 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
- It has a neutral pH so it can be directly in contact with metal framing or top hat systems

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 11 kg/m^2 which is 30% lighter than cement based boards of the same thickness, making it easier to lift and move around site.

Safety

When cutting, cement boards or metal sheets require the use of power tools. In contrast, Weather Defence just requires a Stanley knife hand tool.

Dust hazards and cutting areas

Cutting cement 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 twelve months. It makes the building watertight which means the internal trades – linings, electrical and mechanical contractors 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

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

Combined with a 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.

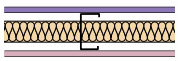
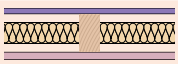
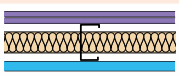
Thermal performance

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 Resilient Bar (most effective)

System	Components	Loadbearing fire resistance to AS 1530.4	Non-loadbearing fire resistance to AS 1530.4	Acoustic performance RwdB	Thermal performance
	**Sheathing board(s)** 1 x 13mm Weather Defence **Frame** Steel, min. 92mm x 35mm x 1.15BMT **Internal board(s)** 1 x 16mm FR Plasterboard **Insulation** 50mm 45kg/m³ rock mineral wool	60/60/60 both directions	-/60/60 both directions	46	Excellent U-values can be achieved (0.15W/m²K or better)
	**Sheathing board(s)** 1 x 13mm Weather Defence **Frame** Timber, min. 90mm x 45mm **Internal board(s)** 1 x 16mm FR Plasterboard **Insulation** 50mm 45kg/m³ rock mineral wool	60/60/60 both directions	-/60/60 both directions	43	Excellent U-values can be achieved (0.15W/m²K or better)
	**Sheathing board(s)** 2 x 13mm Weather Defence **Frame** Steel, min. 92mm x 35mm x 0.75BMT **Internal board(s)** 1 x 20mm PROMATECT® 100 **Insulation** As required for spec	NA	-/120/120	See tables page 11	See tables page 11

Note: System performances may be dependent on specific project circumstances, contact Promat Technical Services to confirm.

R-Value and acoustic table

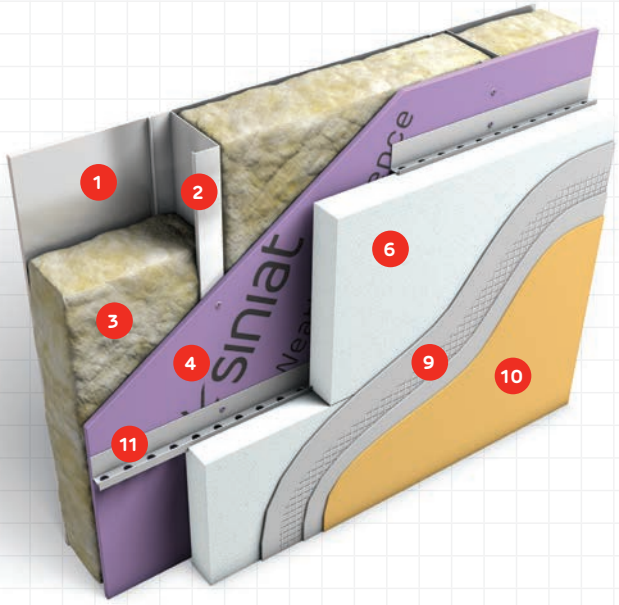
	External Lining/s	Cavity Insulation	Internal Lining/s	Total R-Value AS/NZS 4859.2:2018 & NSZ 4214:2016	Acoustic Value (Rw)
Steel Stud 47.5 W/(m.K)	1 x 13mm Weather Defence	None	≥13mm Plasterboard	0.29	39
		R1.5 (75mm)	≥13mm Plasterboard	1.22	44
		R2.0 (90mm)	≥13mm Plasterboard	1.42	44
		R2.5 (90mm)	≥13mm Plasterboard	1.56	46
		R2.7 (90mm)	≥13mm Plasterboard	1.61	47
	2 x 13mm Weather Defence	None	2 x 13mm Plasterboard	0.36	51
		R1.5 (75mm)	2 x 13mm Plasterboard	1.29	55
		R2.0 (90mm)	2 x 13mm Plasterboard	1.50	56
		R2.5 (90mm)	2 x 13mm Plasterboard	1.64	57
		R2.7 (90mm)	2 x 13mm Plasterboard	1.68	58
		None	1 x 20mm PROMATECT® 100	0.44	50
		R1.5 (75mm)	1 x 20mm PROMATECT® 100	1.37	55
		R2.0 (90mm)	1 x 20mm PROMATECT® 100	1.57	55
		R2.5 (90mm)	1 x 20mm PROMATECT® 100	1.71	57
		R2.7 (90mm)	1 x 20mm PROMATECT® 100	1.76	57

	External Lining/s	Cavity Insulation	Internal Lining/s	Total R-Value AS/NZS 4859.2:2018 & NSZ 4214:2016	Acoustic Value (Rw)
Timber Stud 47.5 W/(m.K)	1 x 13mm Weather Defence	None	≥13mm Plasterboard	0.29	37
		R1.5 (75mm)	≥13mm Plasterboard	1.52	40
		R2.0 (90mm)	≥13mm Plasterboard	1.88	40
		R2.5 (90mm)	≥13mm Plasterboard	2.15	42
		R2.7 (90mm)	≥13mm Plasterboard	2.25	42
	2 x 13mm Weather Defence	None	2 x 13mm Plasterboard	0.36	45
		R1.5 (75mm)	2 x 13mm Plasterboard	1.59	48
		R2.0 (90mm)	2 x 13mm Plasterboard	1.95	49
		R2.5 (90mm)	2 x 13mm Plasterboard	2.23	49
		R2.7 (90mm)	2 x 13mm Plasterboard	2.33	50

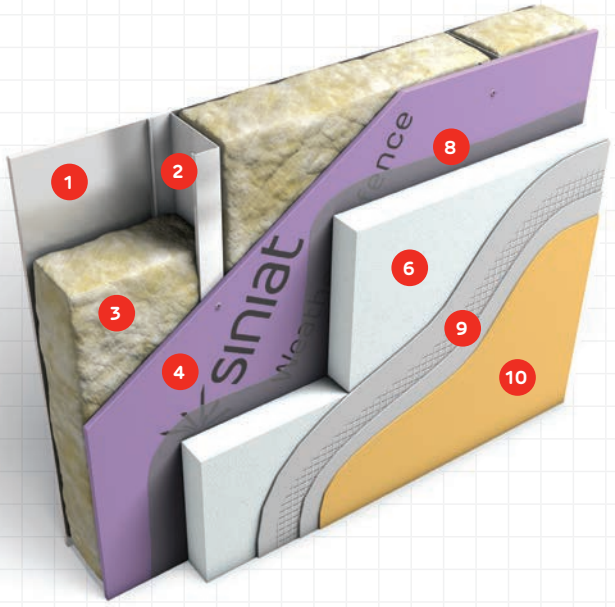
Notes:

- Calculations confirmed in report - Speckel.io to determine Total R-value of stated wall systems in line with NCC 2019 - Vol 1- Energy Efficiency. This requirement is twofold, with AS/NZS 4859.2:2018 defining calculation requirements for the thermal insulation of materials for buildings, while NZS 4214 (2006) defines additional requirements for determining the total thermal resistance of parts of buildings, including thermal bridging.
- Calculations based on "Slightly Ventilated" as per term within AS/NSZ4859.2(2018) - An airspace in which there is provision for limited air flow through it from the external environment by limited openings of area (Av) within the following ranges: (a) For vertical airspaces: >500 mm^2 but <1500 mm^2 per metre of length (in the horizontal direction). (b) For horizontal airspaces: >500 mm^2 but <1500 mm^2 per square metre of surface area.
- 1 noggin is assumed for all wall systems
- Acoustic values modelled in Marshall Day software Insul 9

EXAMPLE SYSTEM CONSTRUCTION DETAILS

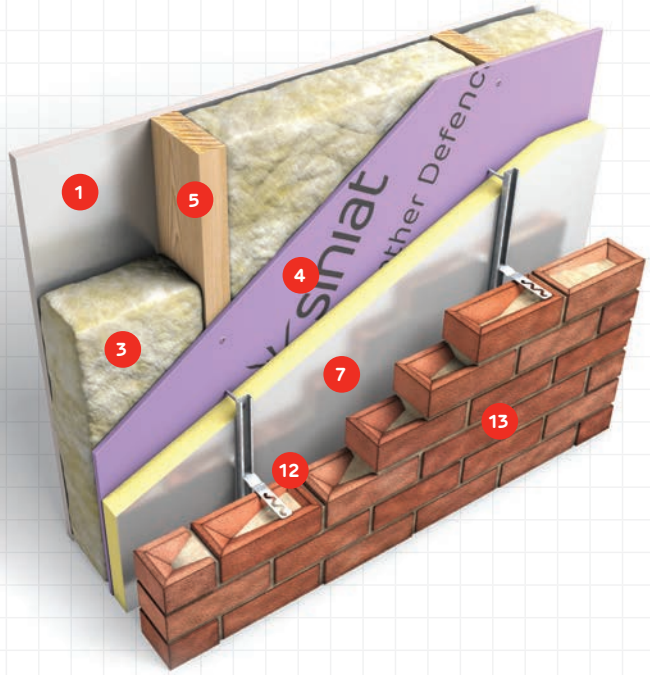


Steel frame with EIFS and rails

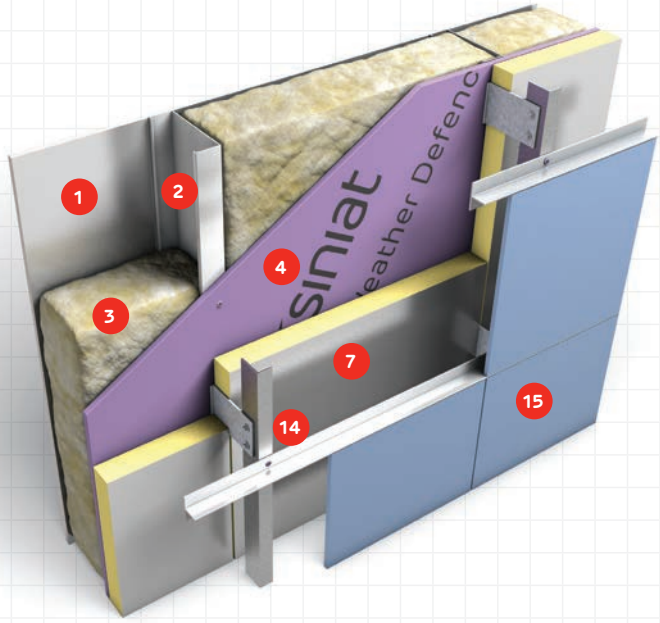


Steel frame with EIFS

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



Timber frame with brickwork cladding



Steel frame with rainscreen cladding

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 to AS 4284 for air infiltration
- Tested for air permeability to European standard EN 12114
- Achieved 0.1 $m^3/m^2/hr$ – a negligible airflow

Humid movement:

- Achieved maximum expansion of just 0.11mm per m (0.011%), from 65% to 85% relative humidity.

Abercynon Primary School, South Wales

Project specification for airtightness: $3m^3/m^2/hr$

Achieved: $2m^3/m^2/hr$

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

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

Resisting Moisture and Vapour Permeability

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 metre, as humidity changes. This means that gaps do not need to be left between boards
- The board is vapour open yet highly water resistant, allowing damaging moisture trapped within a wall to escape

Laboratory evidence:

Vapour resistance test:

- Measured as 2.041µg/MN.s, or 8µ, making Weather Defence a highly vapour permeable building material
- Meets the performance requirements of a vapour permeable membrane - a vapour permeable sarking membrane must be between 0.1-10µg/MN.s as set out in AS4200-2017
- Weather Defence board is available in WUFI® software. WUFI® is a family of software products that allows realistic calculation of the transient coupled one- and two dimensional heat and moisture transport in walls and other multi-layer building components exposed to natural weather.

Weathertightness test:

- Weather Defence has been tested to AS42848 to meet NCC FP1.4 with numerous proprietary cladding systems, including open joint rainscreen facades.
  Please contact Promat Technical Services for more information.

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. 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 vapour permeable membranes are not the same.

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

A vapour permeable 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.

ENGINEERING WEATHER DEFENCE

Fire:

- Weather Defence is a fully non-combustible, 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:

Suitable for use in applications where non-combustible materials are specified by the Deemed to Satisfy Provisions of the 2016 BCA Vol 1 Amendment 1 Clause C1.9 (2015 BCA Vol Clause C1.12)

- Compliant under C1.9(e)(i)
- Additional testing and certification as Euroclass A1
- Fully non-combustible

Fire resistance testing:

- Tests conducted to AS 1530.4 - 2014
- Achieves 60 -120 mins fire resistance (see systems detail on page 10)

Façades on Type A & B construction:

- As a non-combustible compliant board, Weather Defence meets the Deemed-to-Satisfy provisions for external wall components and can be used on buildings of Type A & B construction.

Weather Defence has been tested and assessed with proprietary cladding systems to both BS8414 and AS5113

Please contact our Technical Services team for more information.

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 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.

Project Specification for fire performance:

60 Minutes

System Components

Sheathing board:
1 x Weather Defence

Frame: Steel

Internal boards:
1 x Fire/Aqua Board

System Performance

Loadbearing
fire resistance:
60 Minutes
Both Directions

Non-Loadbearing
fire resistance:
60 Minutes
Both Directions

University of Salford

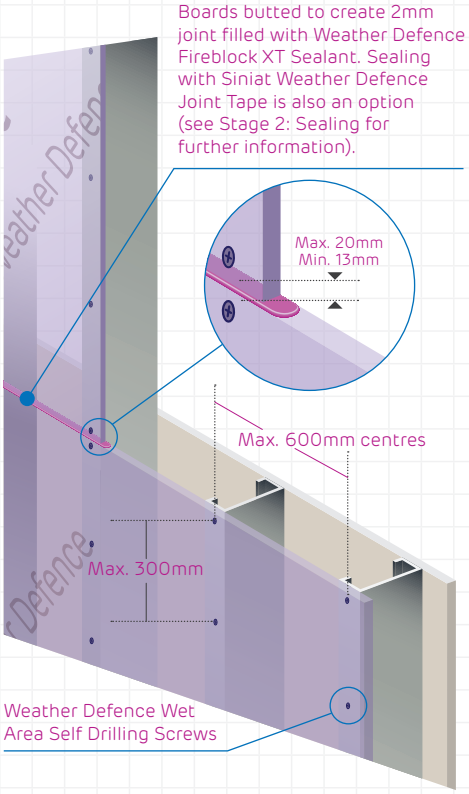
INSTALLATION GUIDE

Stage 1: Fixing Board to Steel Frame*

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

Figure 1

Typical board fixing with Weather Defence Wet Area Self Drilling screws on to steel frame

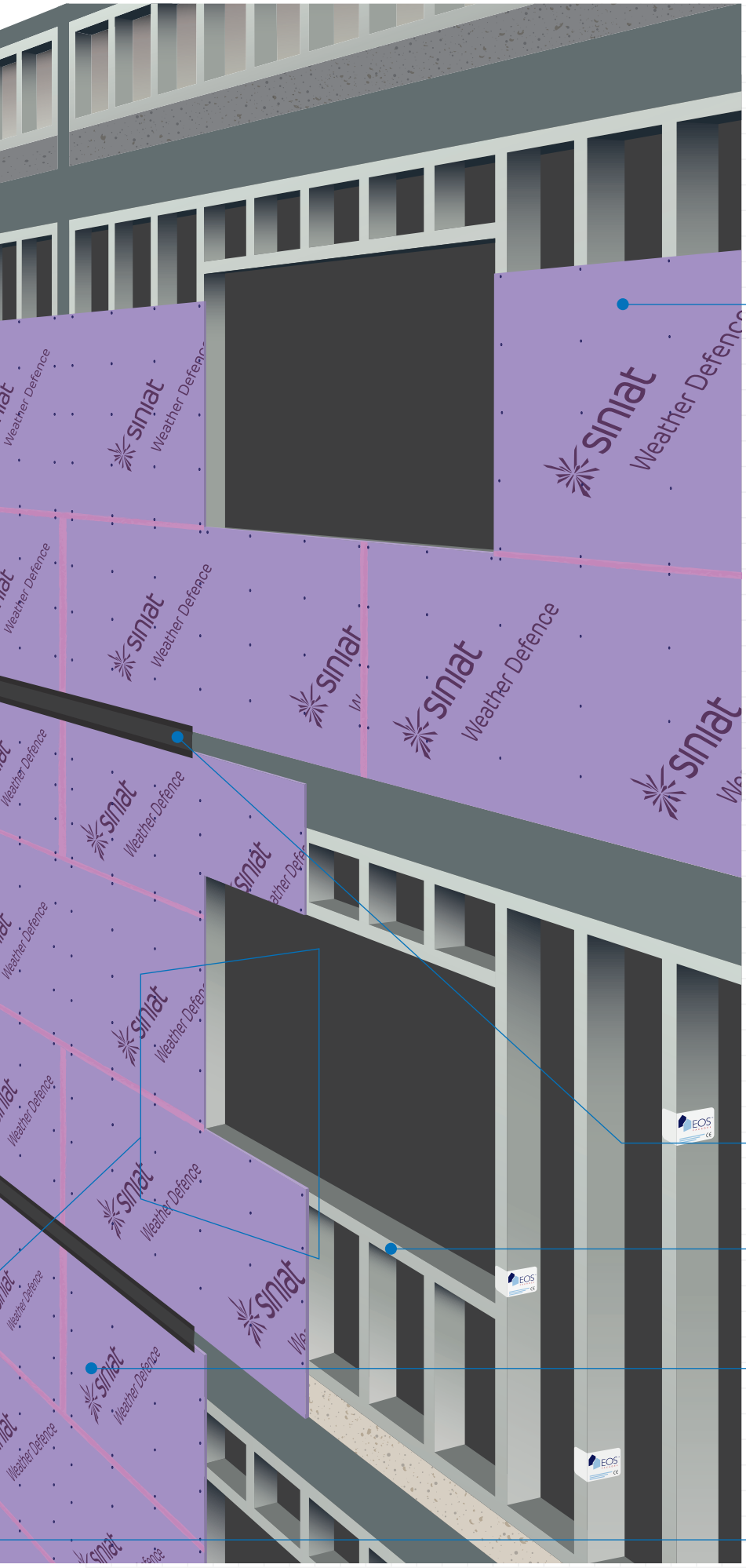


Locate screws at least 13mm and no more than 20mm from board edges and penetrate at least 10mm into the substrate, **see Fig 1, above**.

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

Use Weather Defence 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 & 2, below.

Table 1 13mm Sheeting

STUD CENTRES (MM)	SCREW CENTRES (MM)	SERVICEABILITY WIND LOAD (kPa) SPAN 1/300
600	300	1.22
400	300	2.42
400	250	2.90
400	200	3.63
400	150	4.12

Table 2 10mm Sheeting

STUD CENTRES (MM)	SCREW CENTRES (MM)	SERVICEABILITY WIND LOAD (kPa) SPAN 1/300
600	300	0.50
600	150	1.00
600	100	1.50
400	250	1.00
400	175	1.50
400	125	2.00
400	100	2.50

Pliable building membranes or flexible EPDM tapes should be used to seal deflection or movement joints created in the board layer.

Where metal build up exceeds 3mm contact Promat 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 flat plate or noggin 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 Weather Defence Wet Area Self Drilling screws at maximum 300mm centres
- Fire Rated Sealant or Weather Defence Joint Tape used to seal joints, see opposite

Stage 2: Sealing

Which sealing option:

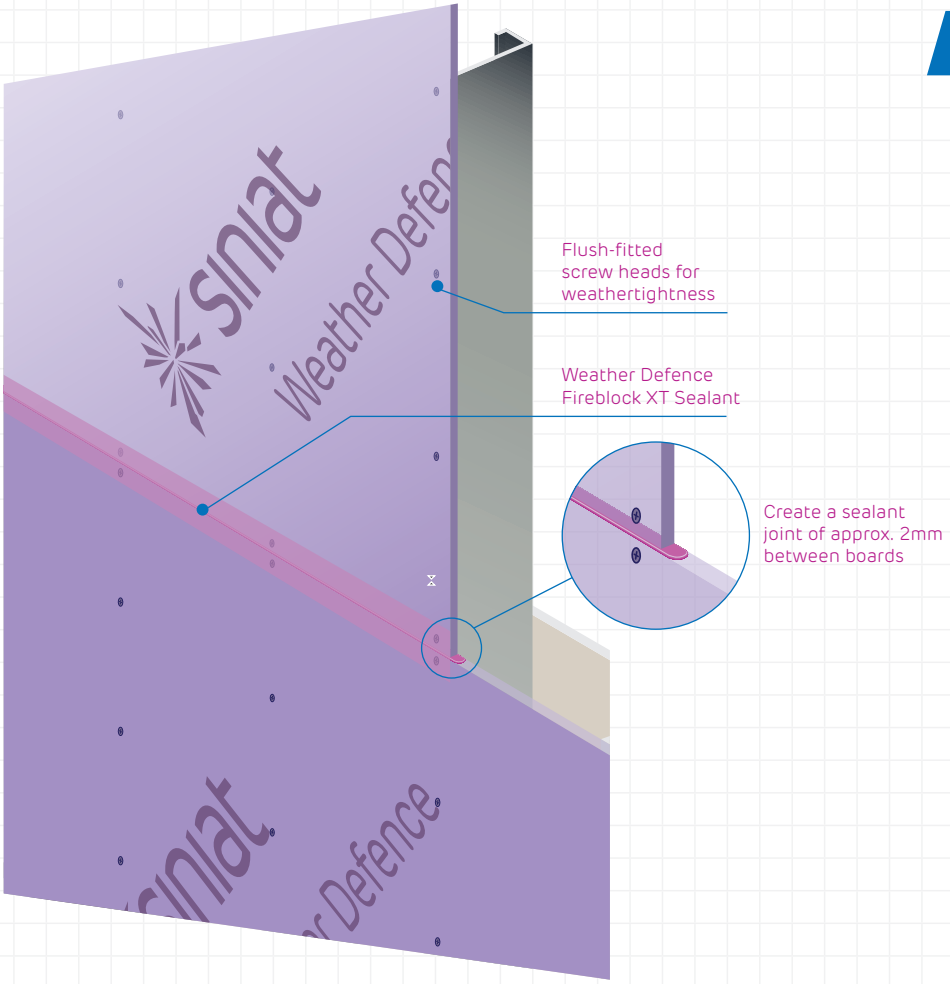
- Sealant alone may be acceptable where the finishing facade cladding have been tested to AS 4284 and proven to meet the performance requirements of the BCA. Where Weather Defence is to be used as the primary weather barrier, Siniat Weather Defence Tape must be incorporated.
- Weather Defence Fireblock XT Sealant to be used where fire resistance and acoustic performance is required.
- Siniat Weather Defence Joint Tape may be used where no fire resistance or acoustic insulation is required.

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 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

Table 3 Sealing capability

	LEVEL OF SEALING REQUIRED			
Joint sealing method	Air	Rain	Acoustic	Fire
Weather Defence Fireblock XT Sealant	●		●	●
Siniat Weather Defence Joint Tape	●	●		



Applying Weather Defence Joint Tape:

- Tape system is limited to an exposure period of no longer than 6 months
- Tape may be applied at any time within the twelve months exposure period following installation providing that limited water penetration through unsealed joints is acceptable
- 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 the applicator paddle to ensure 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 Sealant or Siniat Weather Defence Joint Tape
- Minor damage to the external surface of a sheet can be repaired with the application of suitably sized pieces of 100mm or 60mm Weather Defence Tape. More extensive damage may require the replacement of the damaged section with a patch of Weather Defence board cut to size and Weather Defence Tape applied to all horizontal and vertical joints to form a patch.
- An area larger or if the board has been perforated by damage must be replaced. Additional metal noggins or straps may be required to support the board

Close-up of board

INSTALLATION GUIDE

Stage 4: Insulation Fixing

Cavity and Insulation Rail Fixing:

- Rails or battens may be used with Weather Defence to create cavities 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 16 of this document for additional guidance on insulation*
- 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

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 4, 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 4, 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^2 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 4 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	• 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	• Self-drilling screw fixing, e.g. Ejot SW8R

Figure 2 Insulation fixed to studs with typical insulation fixings **(Category B in Table 4)**

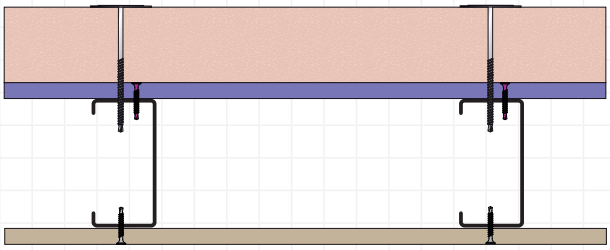
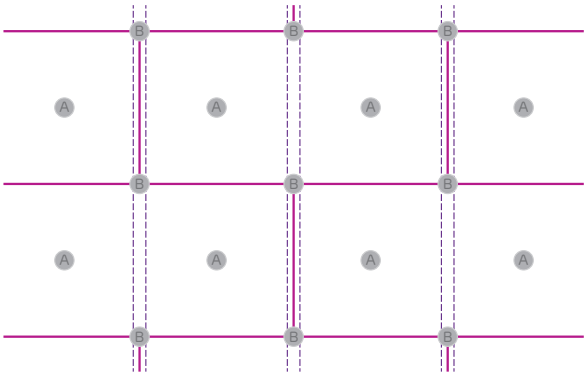


Figure 3 Typical fixing pattern (1.2 x 0.6m insulation board) up to 1.5kN/m² characteristic wind load **(See Table 4 for fixing types)**



Fixing screws should be located at least 13mm, and no more than 20mm from board edges and penetrate at least 10mm beyond the substrate, see Fig 2. Below.

Weather Defence Fireblock XT Sealant should be used in between board joints if fire resistance is required.

Figure 4 Edge distance for board fixing

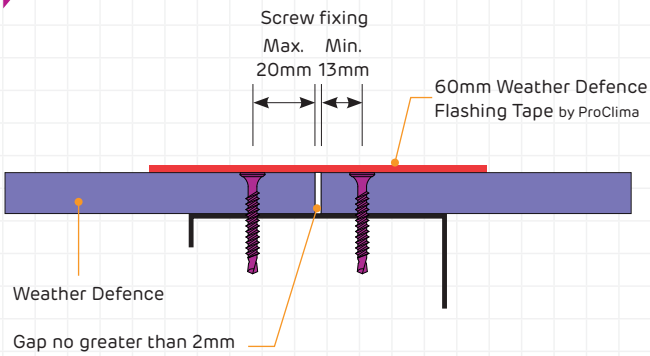


Figure 5 Board fixing centres

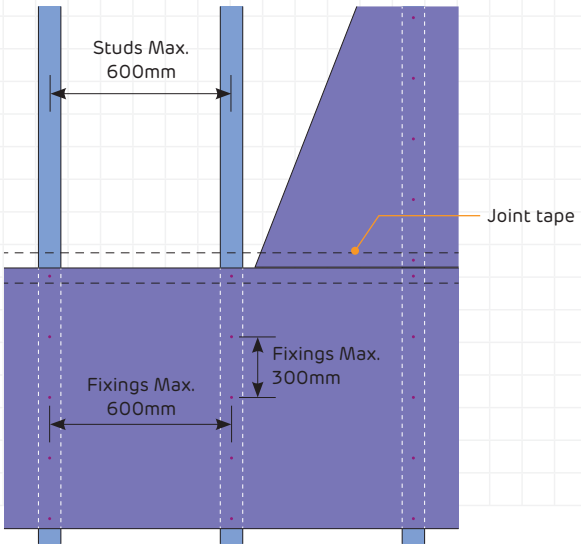


Figure 6 Typical joint detail

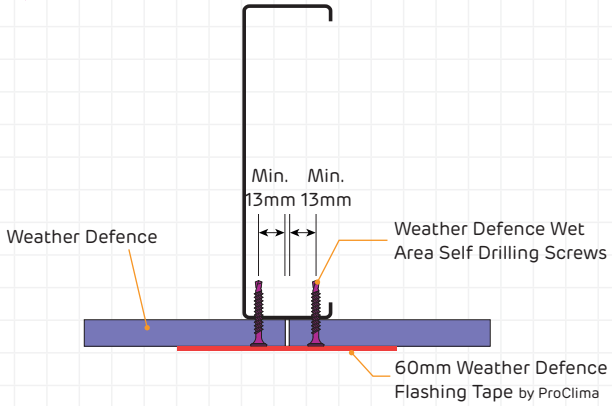


Figure 7 Horizontal control joint detail

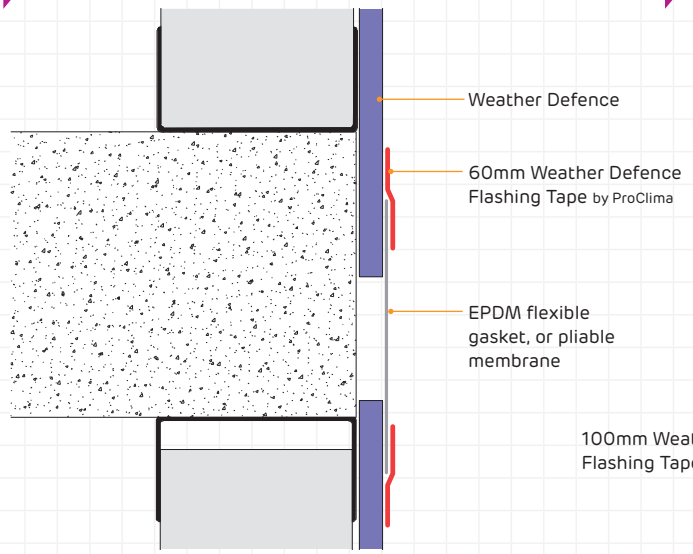


Figure 8 Vertical control joint detail

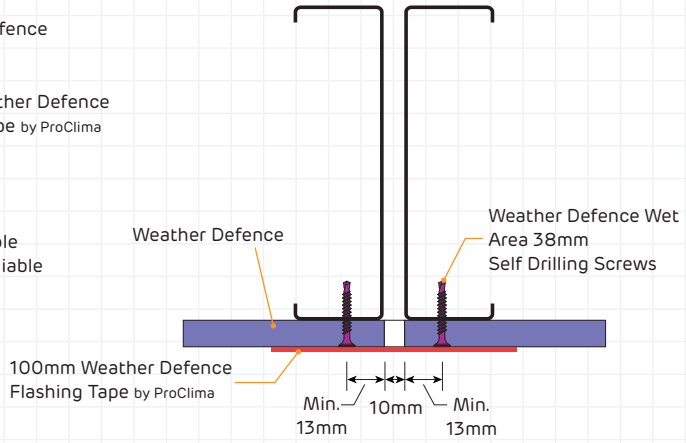


Figure 9 Internal corner detail

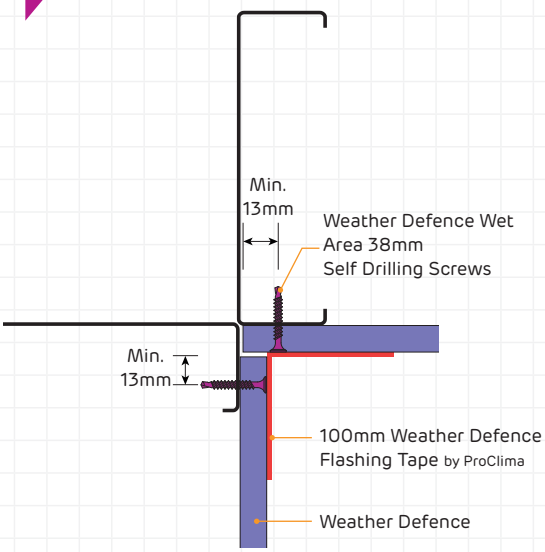


Figure 10 External corner detail

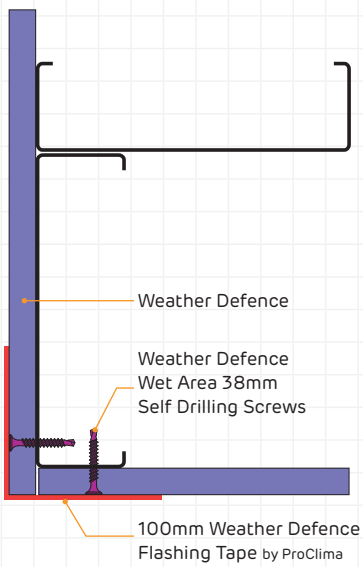


Figure 11 Isometric view of window/meter box opening - Tape application

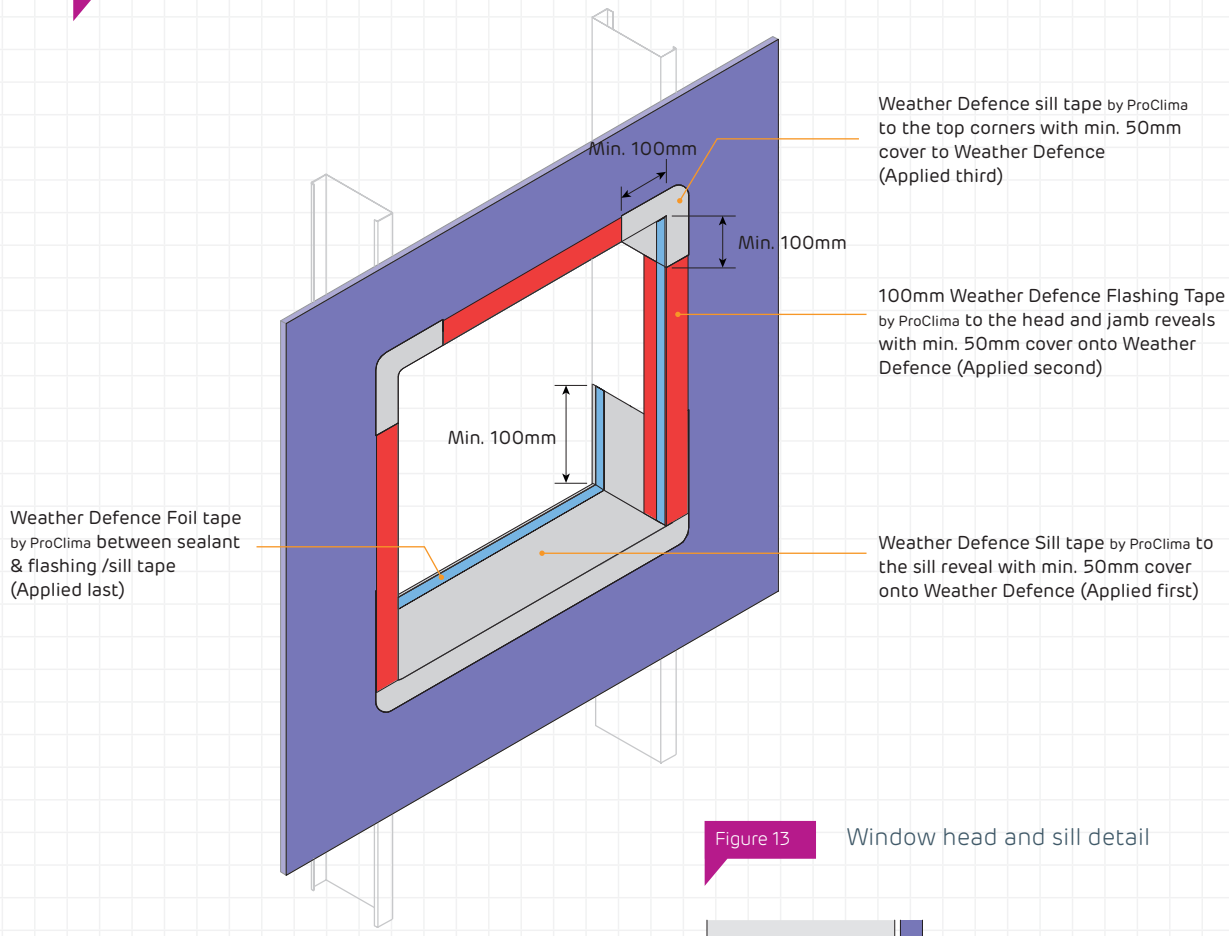


Figure 12 Window jamb detail

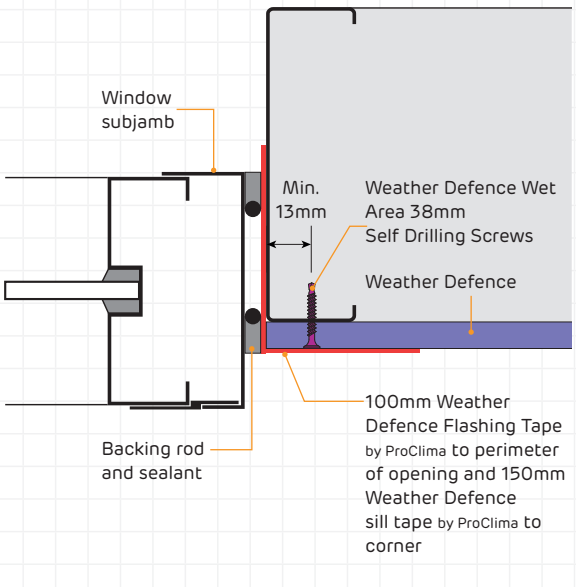


Figure 13 Window head and sill detail

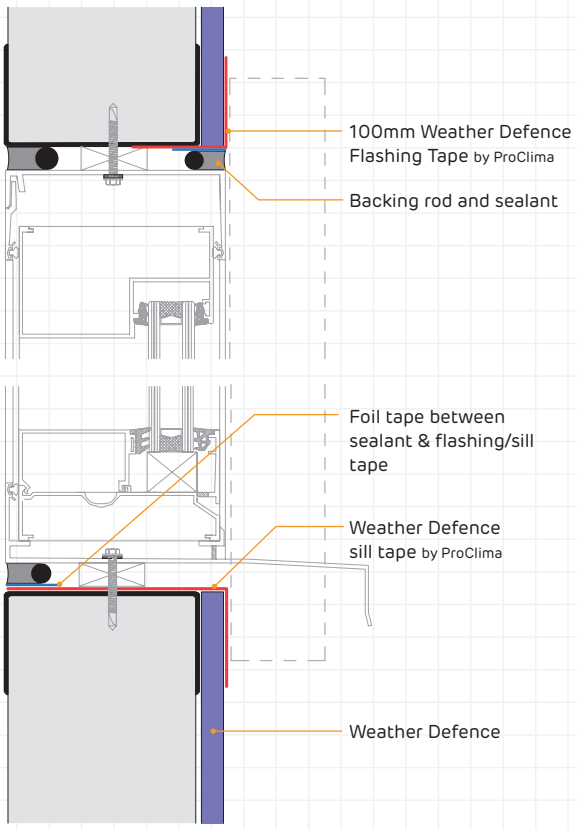


Figure 14 Wall base detail 1

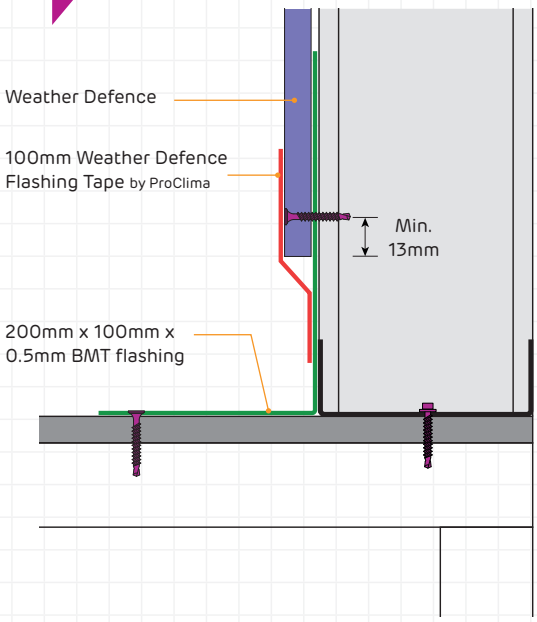


Figure 15 Wall base detail 2

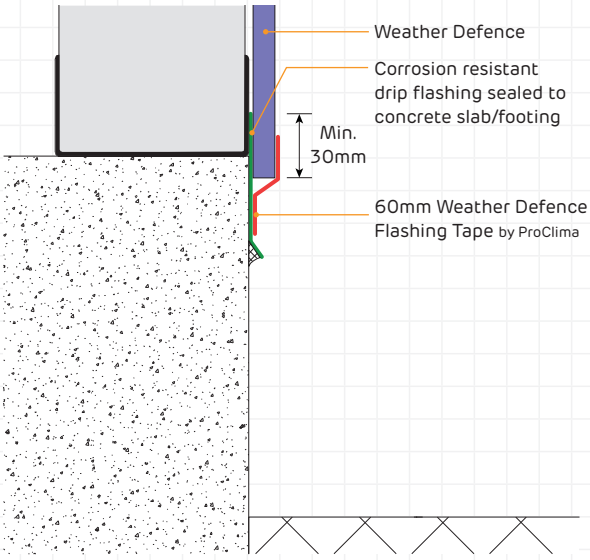


Figure 16 Wall base detail - Covered area

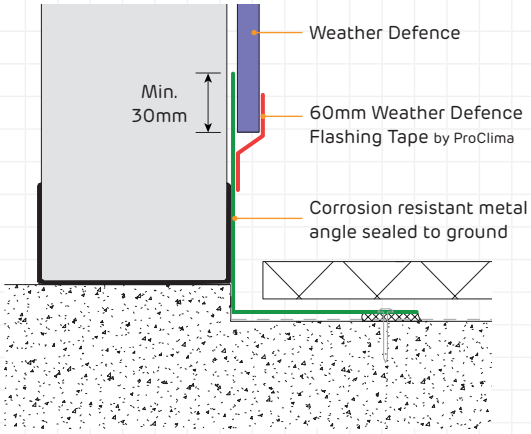


Figure 17 Wall base detail - Balcony

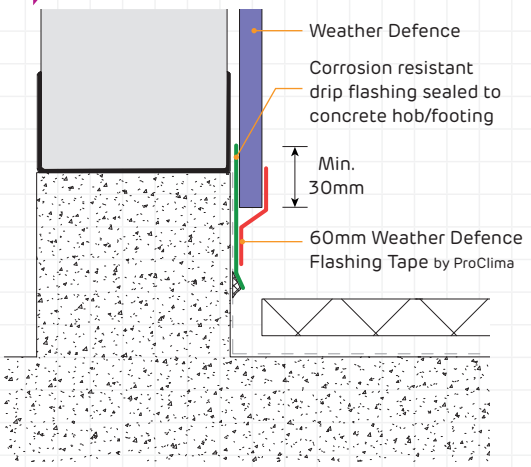


Figure 18 Exposed slab junction detail

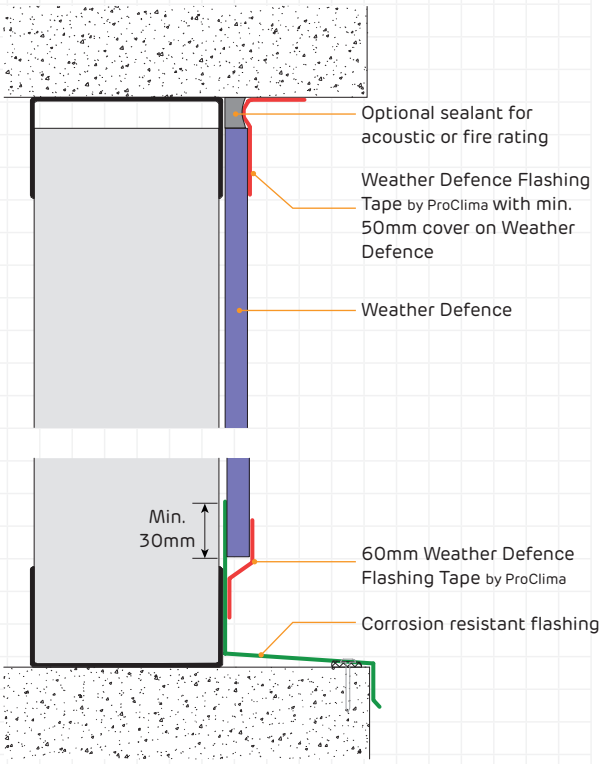


Figure 19 Soffit junction detail

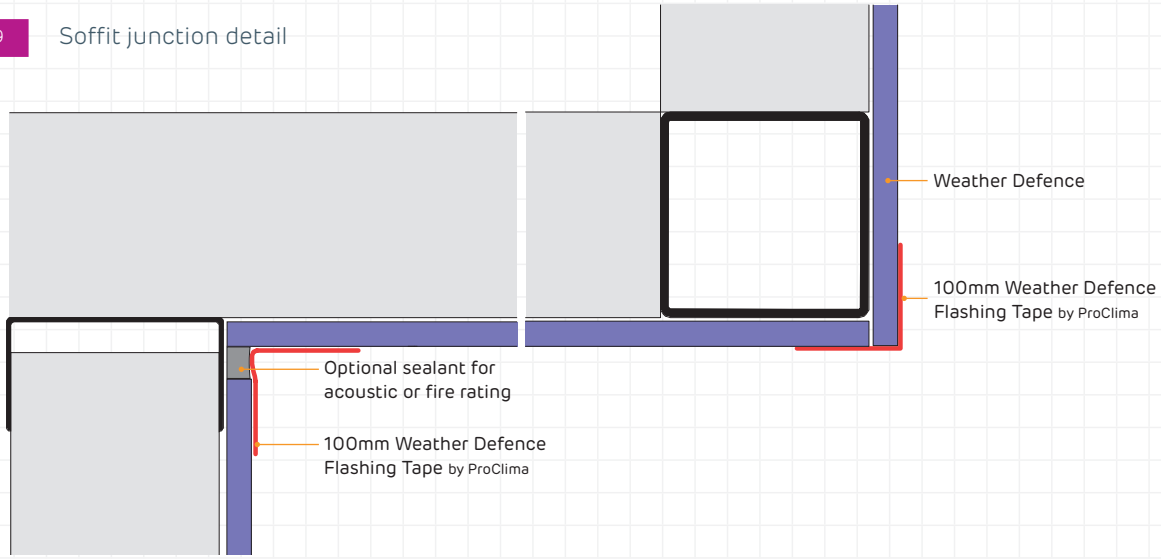


Figure 20 Parapet detail

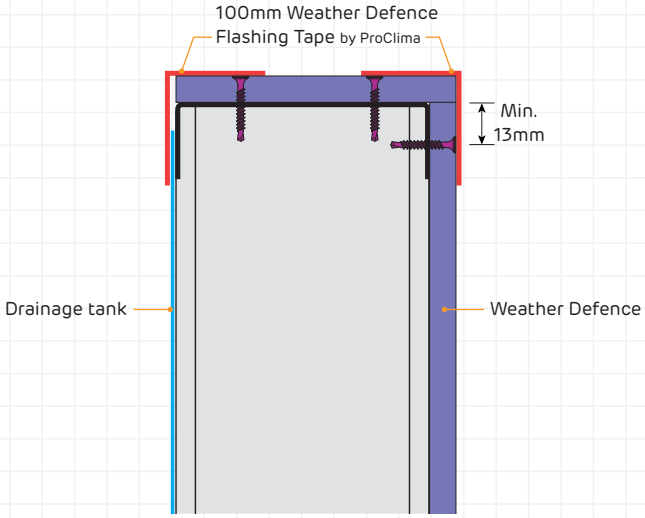


Figure 21 Parapet wall base detail

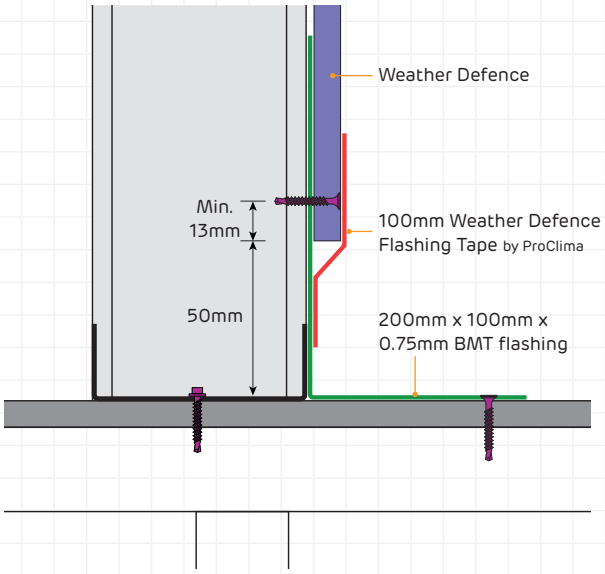
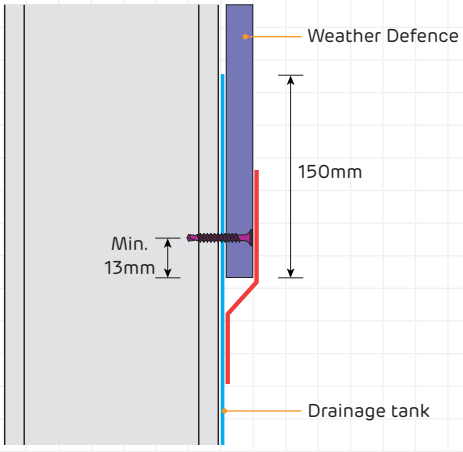


Figure 22 Drainage tank wall detail



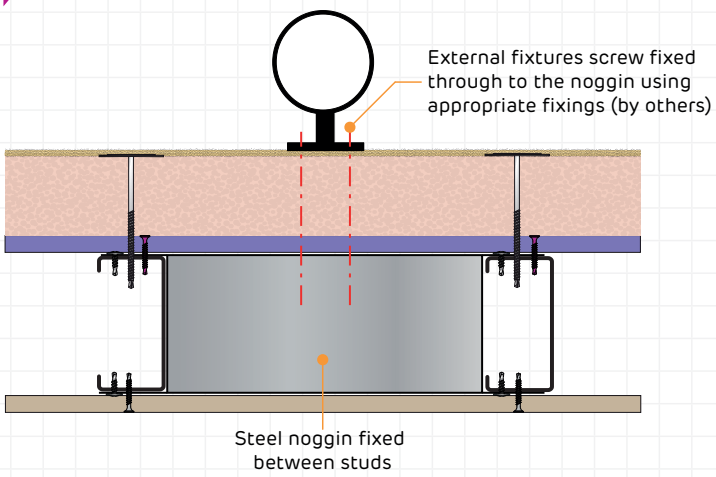
Cladding and Rainscreen Fixing:

- 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 PAPL.mail@etexgroup.com or from fixing suppliers who will conduct testing and fixing selection specific to the site

Figure 21 Lightweight Fixtures attached to Weather Defence



Insulation on Weather Defence

TECHNICAL CHARACTERISTICS

Type	Description	Performance Values	Units
General	Density	**860**	kg/m^3
Mechanical properties	Flexural strength longitudinal direction	**680**	N
	Flexural strength transverse direction	**310**	N
	Elastic modulus longitudinal direction	**3600**	MPa
	Elastic modulus transverse direction	**3150**	MPa
	Impact resistance	**GM-I**	
	Compressive strength	**9**	N/mm^2
Fire	Reaction to fire	**A1**	
Thermal	Thermal conductivity	**0.25**	W/mK
	Thermal resistance (13mm board)	**0.05**	m^2.K/W
Permeability	Water vapour resistance (13mm board) according to ISO 12572:2001	**0.49**	MNs/g
	Water vapour resistance factor (μ) according to ISO 12572:2001	**8**	
Moisture resistance	Water uptake (2 hrs immersion)	**< 3**	%
	Surface water absorption (2 hrs Cobb test)	**< 100**	g/m^2
	Dimensional change (20°C/30%-65%RH), longitudinal direction dimensional stability	**0.09**	mm/m
	Dimensional change (20°C/65%-85%RH), longitudinal direction dimensional stability	**0.11**	mm/m
	Dimensional change (20°C/30%-65%RH), transverse direction dimensional stability	**0.09**	mm/m
	Dimensional change (20°C/65%-85%RH), transverse direction dimensional stability	**0.05**	mm/m
Mould resistance	Resistance to mould growth – ASTM 03273	**10/10**	no mould growth
Pull–through (with 3x safety factor)	Pull-through resistance (23°C /50%RH), Siniat Wet Area High Thread fixing	**312**	N
	Pull-through resistance (23°C /50%RH), Siniat Wet Area Self Drilling fixings	**326**	N
		254	N
Shear strength	Shear resistance	**0.88**	kN/Screw
Pull–through resistance (centre)	Siniat Weather Defence Wet Area Self Drilling	**0.33**	kN
	Siniat Weather Defence Wet Area High Thread	**0.31**	kN

Waste and recycling

- 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 handing technique has to be made to limit risk.

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.

Disclaimer

Information in this brochure is general in nature, it is up to you to confirm with your certifying authority for specific project building code compliance.

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: Nominal 13mm & 10mm

Width: 1200mm

Length: 2400mm
*Custom sizes available upon request

Boards per pallet: 40

Board weight: 11kg/m^2 & 9kg/m^2

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 12 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 www.promat.com.au for more details.

Weather Defence delivers on performance

- The information you need upfront to prove it will deliver on technical performance

bcia british construction industry awards 14 WINNER

12 YEAR WARRANTY siniat

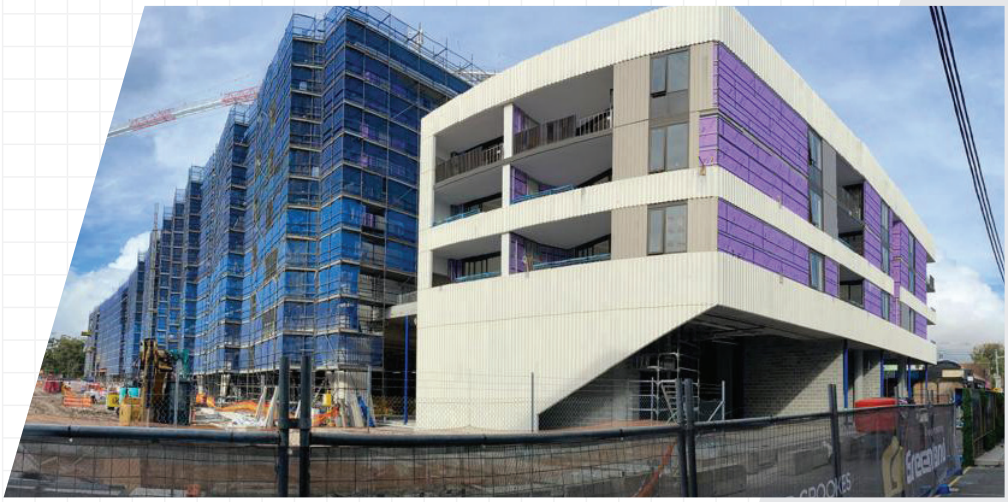
PROJECTS REFERENCE

Azure luxury apartment, Melbourne

Siniat Weather Defence board was specified to provide a 60min fire rating for the external walls facing neighbouring properties. The board was used in conjunction with a rainscreen facade system from EQUITONE. The Weather Defence provides a robust weathertight building envelope, whilst managing condensation risk by being highly vapour permeable.

The builder and staff onsite were extremely impressed during the rain, watching the water bead off and run down whilst the interior stayed dry, allowing internal trades to keep working. This would not have been possible without the use of Siniat Weather Defence installed early on in the build.

Park Sydney, Sydney



Weather Defence was selected as the site needed a rigid weather barrier for use behind ventilated rainscreen capable of providing a high performance facade, whilst meeting all fire compliance requirements.

Due to the building being non-sprinkler protected, all external walls were required to have an FRL not less than -/60/60. This requirement was easily met using the 13mm Weather DefenceR board and an internal FR plasterboard lining. Further to this, the use of Weather Defence provided an increased acoustic performance, over a pliable sarking membrane, whilst still being highly vapour permeable to control interstitial condensation risks.

Over 10,000m^2 of Weather Defence was installed over the 3 blocks, allowing early close in of each building. This allowed internal trades to keep to project schedules, evening during large rain events.

NOTES

siniat
Shaping the way people build

To see how Weather Defence can benefit your next project, call our Technical Services team on **1800 PROMAT (776 628).**

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Promat

Promat companies are subsidiaries of Etex, a Belgian industrial group, that specialises in manufacturing and marketing high quality building materials and systems.

Founded more than 110 years ago, Etex currently operates 113 factories and 102 companies across 42 countries, employing more than 14.500 people.

Edition: May 20

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