Duraliner™ Interior Lining Board

general purpose interior lining board

Duraliner™ - specially formulated substrate for use in wet areas

Build it better with **BGC**

BGC Fibre Cement

Australian Owned & Manufactured ww.bgc.com.au/fibrecement

History & Mission

BGC Fibre Cement and Plasterboard is a proud Australian owned manufacturer of fibre cement and plasterboard products.

BGC has state-of-the-art manufacturing facilities in Perth and distribution centres in all states of Australia and in New Zealand.

Our distribution network ensures that our entire product range is readily available in all states of Australia.

BGC has a team of technical specialists that can assist with all specification and design information to help ensure that you always 'build it better with BGC'.

BGC has interests in:

- residential and commercial building
- building and construction products
- contract mining
- civil engineering construction and maintenance
- quarrying
- road transport
- property ownership and management
- insurance

Our mission at BGC is simple – we want to ensure that people can always **'build it better with BGC'.**

In keeping with our mission, we are constantly assessing and improving our products to ensure that we always provide cost effective, high quality and easy-to-use products to the market.

Duraliner™
Interior Lining Board

general purpose interior lining board

BGC Duraliner™ is a general purpose fibre cement building board designed for flush jointing.

It has been specially formulated and prepared to meet the requirements for use in wet areas, interior linings, ceilings, a substrate for ceramic wall tiles and fire & acoustically rated interior walls.

BGC Duraliner™ can also be used on exterior applications, such as soffits, where it will not be subjected to the direct actions of the weather.

Duraliner™:

- Can be used for a wide variety of applications
- Can be used as part of fire and acoustic rated wall systems
- Sheet is face coated with a green tinted sealant
- Rebated on 3 edges for ease of jointing and installation

Contents

Product Description

Duraliner™ is a general-purpose fibre cement building board intended for flush jointing. It has been specially formulated and prepared to meet the requirements for use in Wet Areas, Interior Linings, Ceilings, and as a Substrate for Ceramic Wall Tiles.

In heavy duty commercial applications for wall tiling, fibre cement sheets are to have a minimum thickness of 9.0mm as per the Australian Standard AS 3958.1 “Ceramic Tiles - Guide to Installation”.

Duraliner™ is also manufactured in 12.0mm thickness for areas where maximum impact resistance is required.

Duraliner™ can also be used on exterior applications, such as soffits, where it will not be subject to the direct actions of the weather.

Product Information

Duraliner™ is manufactured from Portland cement, finely ground silica, cellulose fibres and water. It is cured in a high-pressure steam autoclave to create a durable, dimensionally stable product.

Duraliner™ is manufactured to comply with the requirements of AS 2908.2 Cellulose Cement Products. It is classified by CSIRO as group 1 material in accordance with specification C1.10a of the BCA.

Appearance

Duraliner™ is available with factory machined recesses on the two long sides and one end, ready for flush jointing. The sheet face is coated with a green tinted sealant.

Mass

The approximate weight of Duraliner™, at equilibrium moisture content, is as tabulated.

NOMINAL THICKNESS (MM)	APPROX. WEIGHT (KG/M2)
6.0	8.22
9.0	12.51
12.0	16.44

Fire Resistance

Duraliner™ has been tested by the CSIRO (Building, Construction and Engineering Division) in accordance to Australian Standard AS1530.3 see report number FNE 7524 (6.0 mm Duraliner™) and FNE 7527 (9.0 mm Duraliner™).

This report deemed the following Early Fire Hazard Indices:

Ignitability Index	0
Spread of Flame Index	0
Heat Evolved Index	0
Smoke Developed Index	0 ~ 1

Handling & Storage

Duraliner™ sheets must be stacked flat, up off the ground and supported on level bearers. The sheets must be kept dry, preferably by being stored inside a building. When stored outdoors they must be protected from the weather.

Care should be taken to avoid damage to the ends, edges and surfaces.

Sheets must be dry prior to being fixed, or painted.

Sheets must be carried on edge.

Quality Systems

BGC Fibre Cement manufactures Duraliner™ under the rigorous Quality Management System of the International Standard ISO 9001:2008, and is the holder of Licence Agreement number QEC2955/13.

Sheet Sizes

Duraliner™ is supplied in a variety of sizes and thicknesses to suit its wide range of applications.

THICKNESS (MM)	LENGTH (MM)	SHEET WIDTH (MM) RECESSED EDGE		
		900	1200	1350
6.0	1800		x	
	2100		x	
	2400	x	x	x
	2700		x	
	3000	x	x	x
	3600		x	x
	4200		x	x
9.0	2400		x	
	2700		x	
	3000		x	x
	3600		x	x
12.0	3000		x	

Health & Safety

BGC Duraliner™ is manufactured from cellulose fibre, finely ground sand, Portland cement and additives. As manufactured the product will not release airborne dust, but during drilling, cutting and sanding operations cellulose fibres, silica and calcium silicate dust may be released.

Breathing in fine silica dust is hazardous, prolonged exposure (usually over several years) may cause bronchitis, silicosis or cancer.

Do not breathe dust

When cutting sheets, work in a well-ventilated area and use the methods recommended in this literature to minimise dust generation. If using power tools for cutting, drilling or sanding they must be fitted with appropriate dust collection devices or the operator should wear an approved (P1 or P2) dust mask and safety glasses.

These precautions are not necessary when stacking, unloading or handling fibre cement products.

For further information or a Material Safety Data Sheet contact the nearest BGC Sales Office.

Sheet Cutting & Drilling

Duraliner™ sheets may be cut to size on site.

Suitable cutting methods are:

- **Score and Snap**
  Using a straight edge score the sheet face 4 or 5 times with a tungsten tipped 'Score & Snap' knife. While supporting the scored edge with the straight edge, snap the sheet upwards for a clean break.

- **Hand Sawing**
  Mark out the cut lines on the face side of the sheet. Support the back of the Duraliner™ sheet close to the cut. A fine-toothed saw can be used. A quick jabbing action gives best results.

- **Drilling**
  Duraliner™ sheets can be drilled using normal high-speed masonry bits. Do not use the drill's hammer function. For small round holes such as tap penetrations, the use of a hole-saw is recommended.

- **Penetrations**
  Penetrations can be made by drilling a series of small holes around the perimeter of the cut out. Tap waste piece from the sheet face with a hammer. Support the underside of the opening to avoid damage. Clean rough edges with a rasp.

  Large Rectangular Openings are formed by deeply scoring the perimeter of the opening with a 'score and snap' knife. Next, form a hole in the centre of the opening (see method above) then saw cut from the hole to the corners of the opening. Snap out the four triangular segments. Clean rough edges with a rasp.

- **Durablade**
  180mm diameter. This unique cutting blade is ideal for cutting fibre cement. Can be fitted to a 185mm circular saw. Please ensure safe working practices when using.

Construction Details - Framing

Duraliner™ is suitable for use with both timber and lightweight steel framing.

General

- Framing must be constructed to comply with the Building Code of Australia.
- The framing must be set to a true plane to ensure a straight finish to the wall.
- Studs must be spaced at a maximum of 600 mm centres.
- Noggings must be spaced at a maximum of 1350 mm centres. Noggings must align with the sheet joints see Figure 2a.
- Duraliner™ wall sheets must not be joined off the framing.

Metal Framing

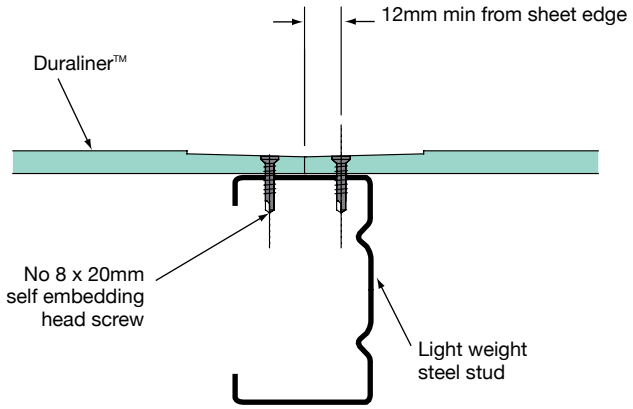
Metal framing must comply with AS 3623 - 1993 Domestic Metal Framing.

Duraliner™ may be fixed directly to lightweight metal framing. The metal framing must not exceed 1.6 mm in thickness and should provide some flexibility to accommodate any differential moisture and thermal movement of the Duraliner™.

If Duraliner™ is used with rigid steel framing, it must be battened out with either timber or lightweight steel battens prior to fixing.

Timber battens must have a minimum thickness of 40 mm to allow adequate nail penetration.

Figure 1 - Sheet Joint Light Weight Steel Framing



Timber Framing

Timber framing must comply with AS 1684 - 1999 National Timber Framing Code.

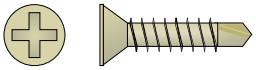
Duraliner™ must not be fixed to wet framing. It is strongly recommended that kiln dried timber is used for framing.

If sheets are fixed to 'wet' framing, problems may occur at a later date due to excessive timber shrinkage.

Fasteners

For fixing 6.0mm and 9.0mm Duraliner™ to timber framing, use 30 x 2.8mm galvanised clouts. For fixing 12.0mm Duraliner™ to timber framing, use 40 x 2.8mm galvanised clouts.

For fixing 6.0mm and 9.0mm Duraliner™ to lightweight steel framing, use No.8 x 20mm self-embedding head screws. For fixing 12.0mm Duraliner™ to lightweight framing, use No.8 x 30mm self-embedding head screws.



Do not place fixings closer than 12mm from sheet edges, or closer than 50mm from the sheet corners.

Sheet fixing must commence at the centre of the sheet and work out to the edges to prevent 'druminess'. The sheet must be held firmly against the framing when fixing to ensure breakout does not occur on the back.

Curved Walls

Duraliner™ may be used on both interior and exterior curved walls and requires no pre wetting. With extra care, Duraliner™ can be bent to the values in brackets in the table below.

	ALONG LENGTH	ACROSS WIDTH
6mm	1800 (1200)	3000
9mm	3000 (1800)	4000

To maintain the smoothness of the curve, studs are required at the spacings detailed below.

RANGE OF RADII (MM)	STUD SPACING (MM)
1200	150
Above 1200 to 1800	200
Above 1800 to 3000	300
Above 3000 to 20000	450*
Above 20000	600*

* or at one third of sheet width, whichever is the lesser.

Note:
BGC Fibre Cement strongly recommend that sheets be curved on the horizontal rather than vertical and if wetted to aid curving, the sheets must be normalised to ambient moisture content prior to flushing.

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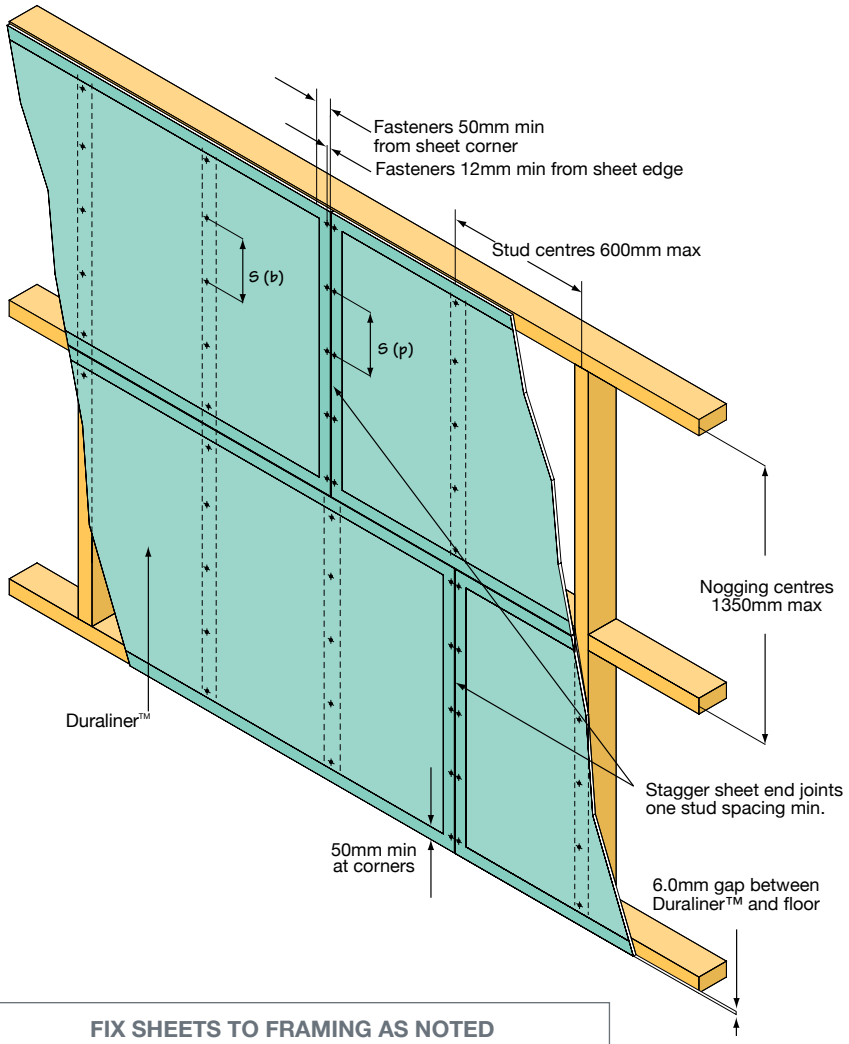
Nail or Screw Fixing System (Mechanical Fasteners) - Sheet Layout

Duraliner™ wall sheets may be fixed vertically or horizontally. However, most flush jointed applications suit horizontal fixing.

Figure 2a - Horizontal Sheet Layout Timber or Steel Framing for UNTILED Walls



	FIXING CENTRES		FIX SHEETS TO FRAMING AS NOTED		
	SHEET PERIMETER S(p)	SHEET BODY S(b)	STUDS	NOGGINGS	TOP & BOTTOM PLATES
UN-TILED	200MM	300MM	✓	x	x

Notes Figure 2a:
Framing must support all sheet joints when fixed horizontally. Install bottom sheets first then work upwards.
Set bottom sheet 6 mm clear of floor. Stagger vertical joints by at least one stud (600 mm typical).
Do not place fixings closer than 12mm from sheet edges, or closer than 50mm from the sheet corners.

Tiled Areas

When Duraliner™ is to be covered with tiles it is essential that it is fixed with nails or screws only. **No adhesive is to be used.** The thickness of tiles used over Duraliner™ is restricted based on the stud centres and thickness of Duraliner™.

DURALINER THICKNESS (MM)	MAXIMUM TILE THICKNESS (MM)	
	Studs at 600mm centres	Studs at 450mm centres
6	9	13
9	13	18
12	18	>25

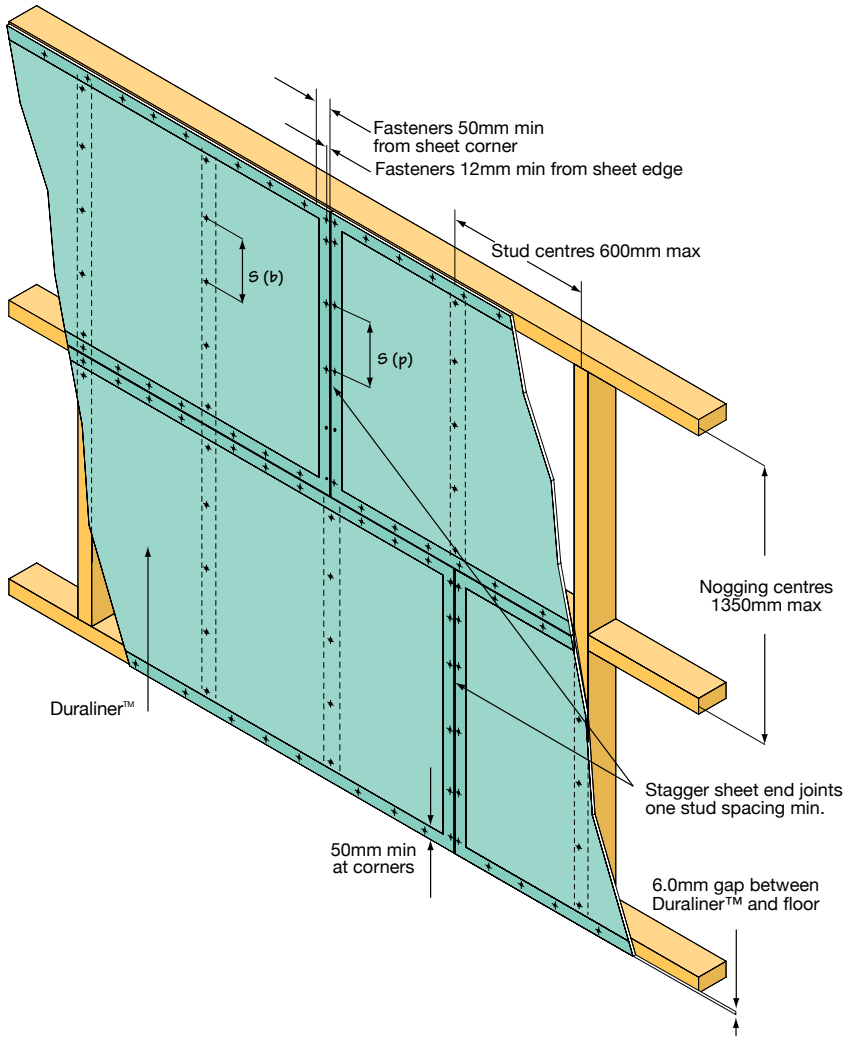
Appropriate support angles are recommended for tiles exceeding 18mm in thickness. Placement and type of angle to be determined by a structural engineer. Contact your local BGC Fibre Cement office.

Membrane and tiles are to be applied as per Australian Standards and manufacturers recommendations.

Nail or Screw Fixing System (Mechanical Fasteners) - Sheet Layout

Duraliner™ wall sheets may be fixed vertically or horizontally. However, most flush jointed applications suit horizontal fixing.

Figure 2b - Horizontal Sheet Layout for TILED walls.



	FIXING CENTRES		FIX SHEETS TO FRAMING AS NOTED		
	SHEET PERIMETER S(p)	SHEET BODY S(b)	STUDS	NOGGINGS	TOP & BOTTOM PLATES
TILED	150MM	200MM	✓	✓	✓

Notes Figure 2b:
Framing must support all sheet joints when fixed horizontally. Install bottom sheets first then work upwards.
Set bottom sheet 6 mm clear of floor. Stagger vertical joints by at least one stud (600 mm typical).
Do not place fixings closer than 12mm from sheet edges, or closer than 50mm from the sheet corners.
Fixings must be placed at 150mm centres at all sheet edges. This includes internal and external corners.

Adhesive Fixing - Stud Walls

Adhesive fixing must not be used where the wall is to be finished with wall tiles. Where the wall is to be tiled, nail or screw fasteners must be used.

For fixing of Duraliner™ to stud walls in un-tiled applications, stud adhesive can be used. Daubs of adhesive are to be applied to the studs at a maximum of 250mm centers. The daubs of adhesive are to be approximately 25mm diameter.

Nail or screw fasteners are still required at 200 mm centres on the sheet ends and 600mm along edges. These are concealed within the flush finishing.

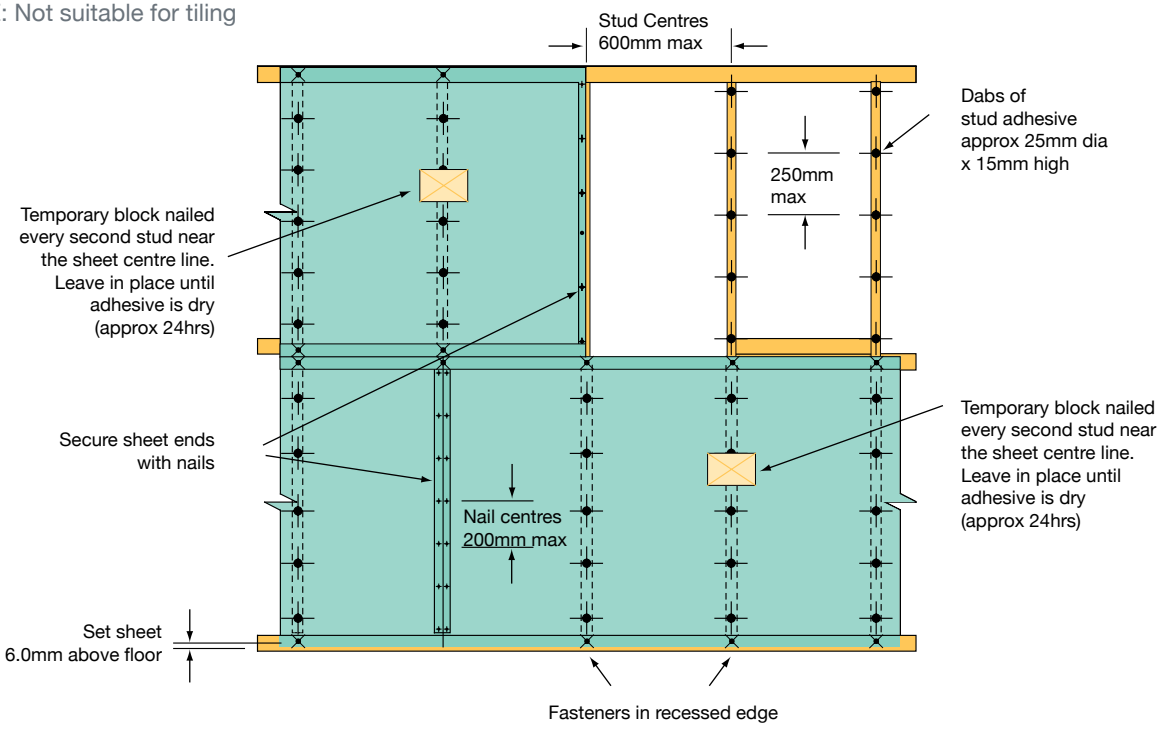
Figure 3 depicts the typical construction detail.

The Duraliner™ sheet must be pressed onto the adhesive until it sits flat. Temporary blocking or props must support the centre of the sheet until the adhesive is dry (normally 24 hours).

Adhesive daubs must never coincide with fasteners.

Adhesive fixing must not be used in fire rated construction.

Figure 3 - Duraliner™
Installation Adhesive Fixing - Stud Construction
NOTE: Not suitable for tiling

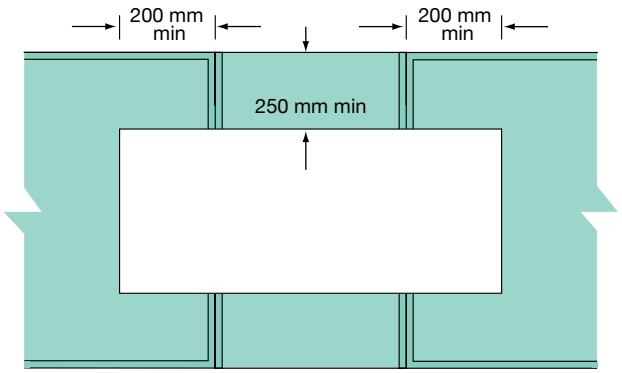


Window & Door Openings

To reduce the incidence of cracks appearing in the jointing, flush jointed sheets should be cut in, 200 mm minimum, around window and door openings as depicted in Figure 4.

If a sheet joint must coincide with the corner of an opening BGC Fibre Cement recommend installation of a relief joint to control cracking. See Figure 5.

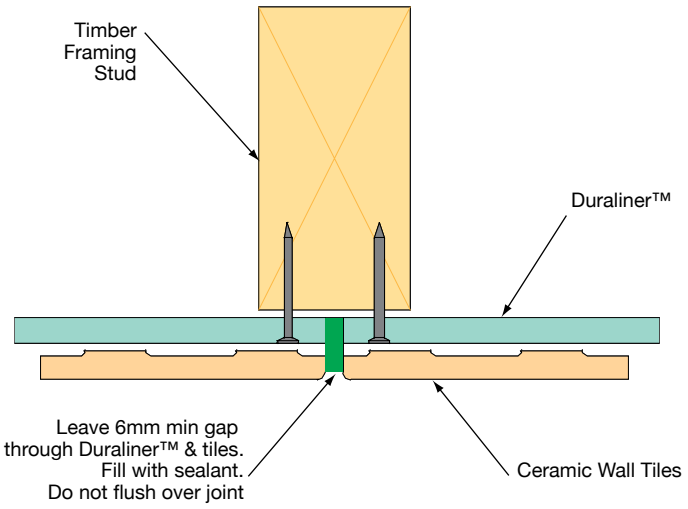
Figure 4 - Window and Door Detail



Relief Control Joints

The use of relief joints is to control cracking at locations such as window or door openings, when cutting sheets in around the opening is impractical.

Figure 5 - Relief Joint (Tiled)



Movement Control Joints

If a continuous run of sheeting exceeds 4.2 m for tiled areas, or 2 m for un-tiled areas, then it must be broken with a movement control (expansion) joint. BGC Fibre Cement recommend the provision of a control joint every 4.2 m in case tiling is undertaken at a later date.

For tiled areas the control joint must carry through the framing, sheeting and tiling, see Figure 6.

For un-tiled areas the use of a Rondo P35 or Peer PXJ30 jointing kit is recommended, see Figure 7.

Eaves & Soffits

BGC Fibre Cement 6mm Duraliner™ sheets are suitable as a soffit lining in both commercial and residential building applications, where large smooth soffits or coffered ceiling areas are required.

For long runs of sheets and or large sheet areas, with set-joints, movement control (expansion) joints must occur at maximum prescribed distances, within the context of the architectural details, climate and loading conditions.

See section Eaves and Soffits on P22.

Figure 6 - Tiled Control Joint

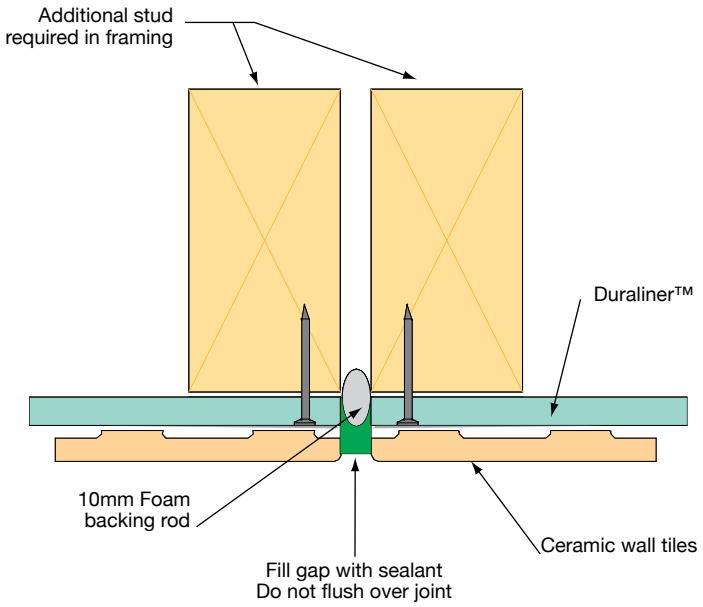
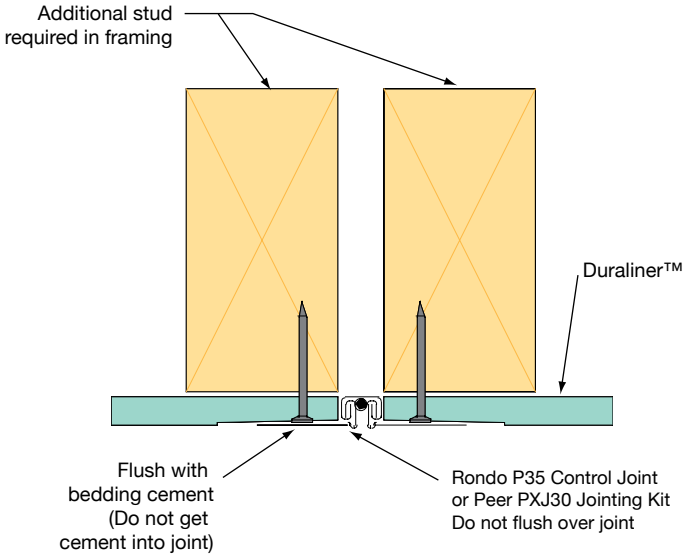


Figure 7 - Un-tiled Control Joint



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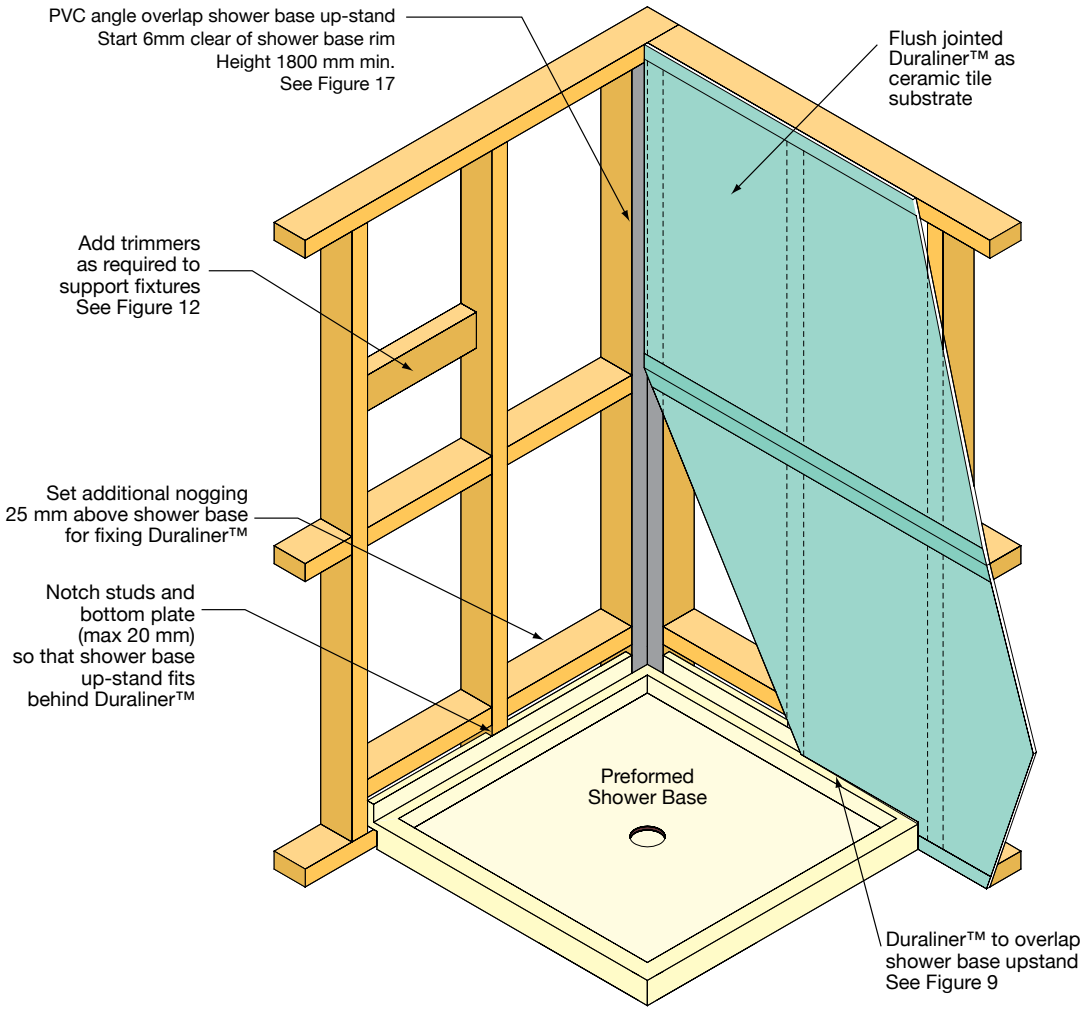
Wet Areas

Wet areas are walls in shower alcoves or surrounding a bath that include a shower. Duraliner™ provides a suitable substrate for ceramic tiles in these applications.

Semi-wet areas are walls adjacent to sanitary fittings such as baths, basins and toilet suites. Duraliner™ is a suitable substrate for ceramic-tiles, paint, wall-paper or vinyl finishes in these applications.

Satisfactory performance of wet area systems depends on strict adherence to the Building Code of Australia.

Figure 8 - Shower Recess Detail



Notes Figure 8:

The inside edge of the shower base up-stand must fit in behind the Duraliner™ without distorting it. To achieve this the studs and bottom plate can be notched out, maximum 20 mm, or alternatively battens can be used to set the Duraliner™ clear of the framing.

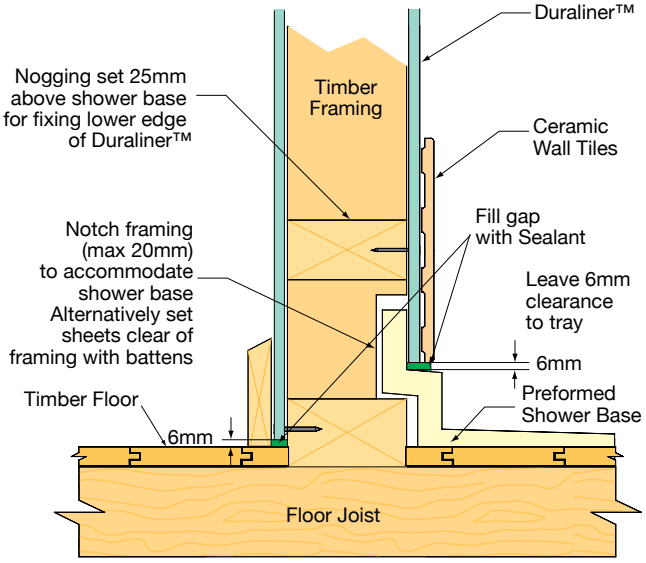
A PVC angle or waterproof lining (membrane) should be fixed in the internal corner behind the Duraliner™. This angle must project inside the shower base up-stand. It should start 6 mm above the shower base rim and extend to a minimum height of 1800 mm. Both flanges of the angles should be nailed to the framing at a maximum 600 mm centres.

Table 1 summarises appropriate construction details for use with different sub-floor materials.

Table 1

SUB FLOORING	PRE-FORMED SHOWER BASE See figures 8&9	FULL INSITU WATERPROOF MEMBRANE See figure 10	PERIMETER FLASHING ONLY See figure 11
TIMBER FLOORING	✓	✓	
PANEL FLOORING SUCH AS PLYWOOD OR PARTICLE-BOARD	✓	✓	
COMPRESSED FIBRE CEMENT	✓	✓	✓
CONCRETE SLAB	✓	✓	✓

Figure 9 - Pre-formed Shower Base



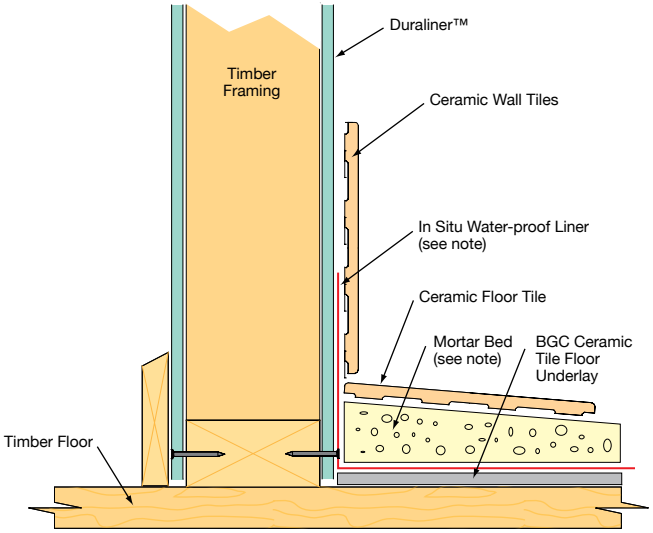
Notes Figure 9:

The Duraliner™ must project inside the vertical lip of the shower base up-stand. A 6 mm gap must be left between the Duraliner™ and the shower base rim. This gap must be filled with a bead of mould resisting flexible sealant.

The Duraliner™ must be flush jointed.

Ceramic wall tiles must be installed over the Duraliner.™ The wall tiles must finish 6 mm above the shower base rim. This gap must be filled with a mould resisting flexible sealant.

Figure 10 - Shower Base Details
(In situ Waterproof Liner)



Notes Figure 10:

The waterproof lining must be installed to the manufacturers specification.

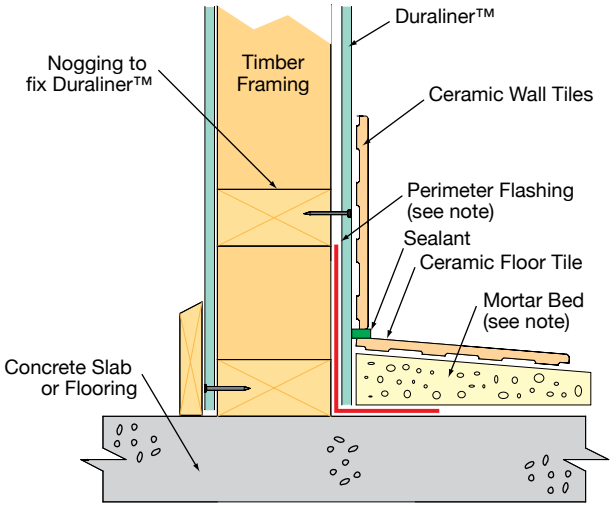
The waterproof lining must extend 150 mm up the walls or 25 mm above any hobs (whichever is greatest).

Internal corners in the shower recess must be sealed to a height of 1800 mm minimum with the waterproof lining or an equivalent treatment.

Mortar Bed: The shower base must have a minimum fall of 1:60 to a floor waste drain.

The Duraliner™ sheets must be flush jointed and tiled over.

Figure 11 - Shower Base Details
(Perimeter Flashing)



Notes Figure 11:
Perimeter flashing may be preformed PVC angles or a waterproof flashing strip such as Hypalon.

The flashing should extend 80 mm min up the wall and 50 mm min across the floor. The corner detail must be waterproof.

The flashing must be bonded to the floor with a two-part flexible epoxy resin designed for this application.

The flashing must not be bonded to the Duraliner™ wall sheets.

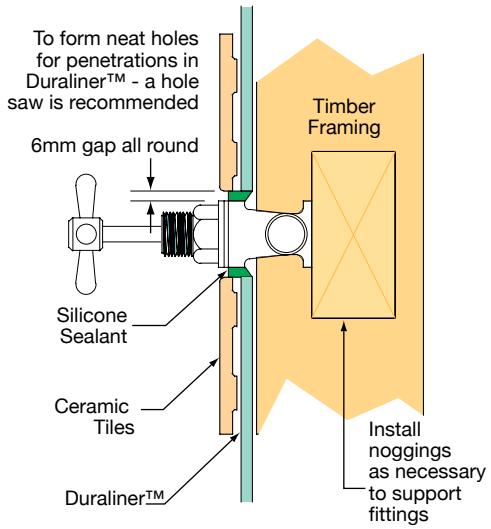
An additional nogging must be installed so that the bottom fixing of the Duraliner™ sheet is above the flashing.

Internal corners of the shower recess must be sealed with a bonded PVC angle or flashing to a minimum height to 1800 mm.

Mortar Bed: The shower base must have a minimum fall of 1:60 to a floor waste drain.

The Duraliner™ sheets must be flush jointed and tiled over.

Figure 12 - Sealing Preparations



Notes Figure 12:
The Duraliner™ should be cut out to leave a 6 mm gap all round the fixture. This gap should be filled with a mould resistant flexible sealant.

BGC recommend using a hole saw to make a neat cut out for fittings such as taps, shower roses etc.

Additional framing must be installed as required to properly support all fixtures.

Figure 13 - Bath Rim Installation Detail

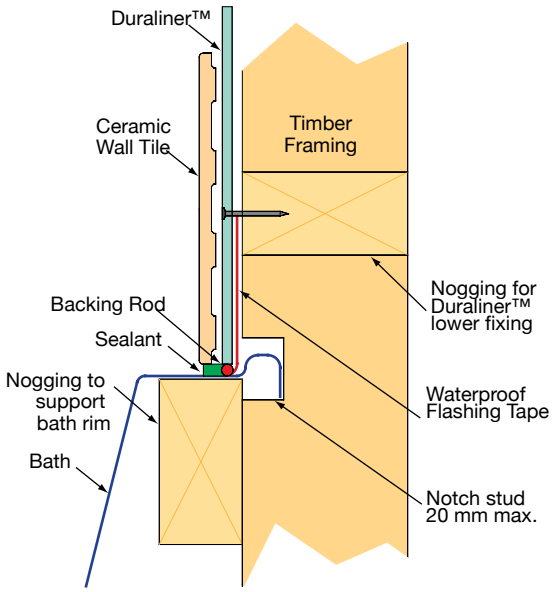
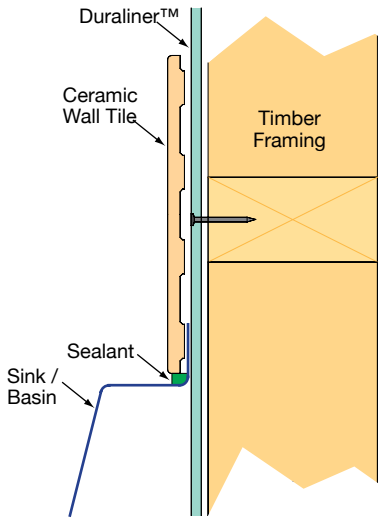


Figure 14 - Sink/Basin Flange Details



Flush Jointing

The edges to be joined must be recessed.

Before jointing sheets that have been cut on site, or the un-recessed end of Duraliner™ sheets must be recessed. The recess should be a nominal 40 mm wide by 1.5 mm deep. The Hitachi 'Easy Bevel' (Model EB100) is specifically designed for this purpose. The recessed surfaces must be sealed using a PVA or Acrylic sealant, such as Cemstick, Lokcrete or Bondcrete.

First Coat: . Fill the recess evenly with bedding cement such as BGC Wet Area Taping Cement. For flat joints and internal corners install a perforated paper tape over the centre of the joint. **Self adhesive tape is not to be used.** Always use a perforated paper tape. Additional bedding cement is then applied to cover the paper tape and the joint edges feathered out to produce a joint that is about 100 mm wide (50 mm each side of the centre line).

Internal corners should be prepared and flushed as shown in Figure 17.

For external corners an external angle bead should be fitted prior to filling. The paper tape is not used for external corners. Figure 18.

Apply a layer of bedding cement over all fastener heads.

Second Coat: After allowing at least one hour for the first coat to dry, a second coat of bedding cement such as BGC Wet Area Taping Cement is applied. This coat should overlap the first coat by about 40 mm each side (total width 180 mm) and be feathered out to produce an unobtrusive joint.

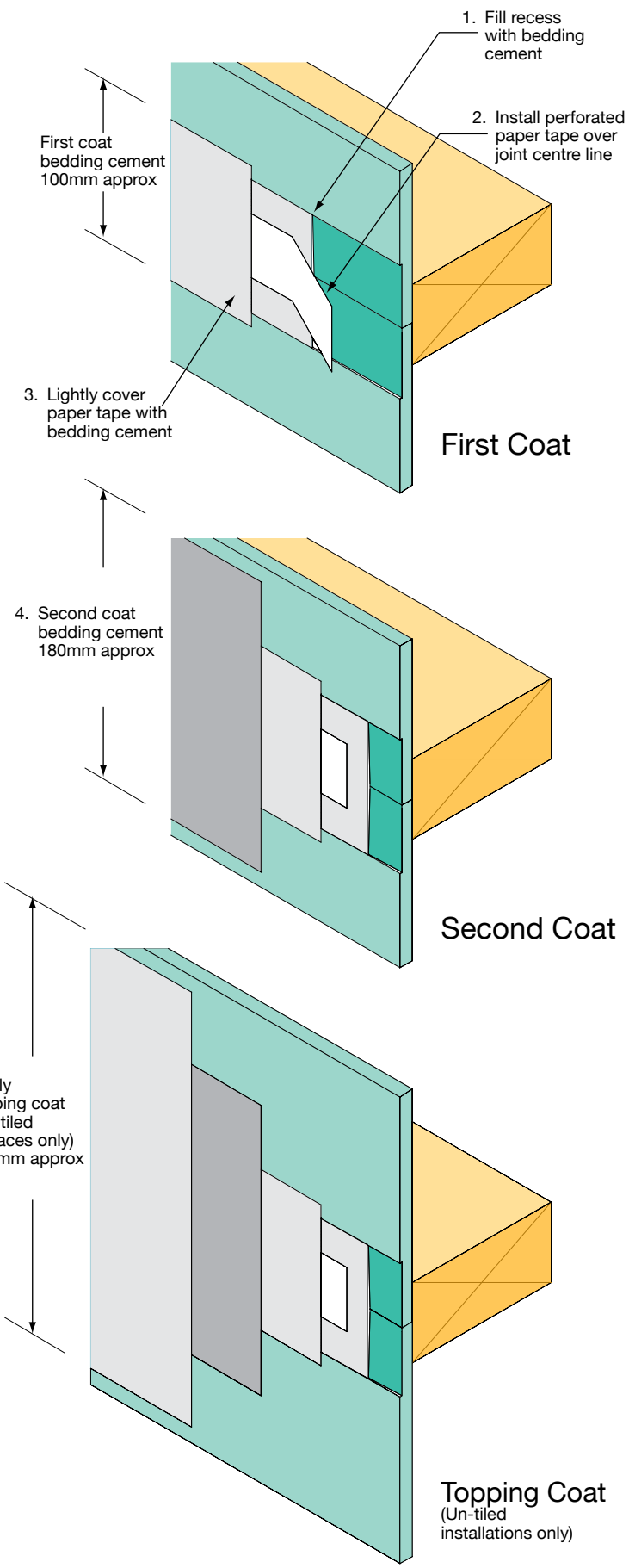
Apply a second layer of bedding cement over all fastener heads.

Topping Coat: (for un-tiled areas only): After the bedding cement has dried thoroughly, a layer of topping cement such as BGC Multi Purpose Joint Compound or BGC Top Coat can be applied. This layer should overlap the preceding layer by 45 to 50 mm each side of the joint and be feathered out to produce an unobtrusive finish.

Allow 24 hours for the topping cement to dry. Sand with 150 grit paper to match the finish of the Duraliner™.

Topping cement must not be used on joints that are to be tiled.

Figure 15



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Wet Area Jointing

The edges to be joined must be recessed.

Before jointing sheets that have been cut on site, or the un-recessed end of Duraliner™ sheets must be recessed. The recess should be a nominal 40 mm wide by 1.5 mm deep. The Hitachi 'Easy Bevel' (Model EB100) is specifically designed for this purpose. The recessed surfaces must be sealed using a PVA or Acrylic sealant, such as Cemstick, Lokcrete or Bondcrete.

Evenly fill all recessed joints and both sides of any corners with BGC Water Resistant Taping Cement. Firmly bed into BGC Water Resistant Taping Cement ensuring all air bubbles are removed.

Apply a skim coat of BGC Water Resistant Taping Cement over embedded paper tape ensuring the paper tape is completely covered. Cover all fastener heads with BGC Water Resistant Taping Cement.

Apply a skim coat of BGC Water Resistant Taping Cement to the edges of the plasterboard at sheet junctions with shower bases and baths, feathering out the BGC Water Resistant Taping Cement onto the board. Allow 24 hours to dry before tiling.

Figure 16

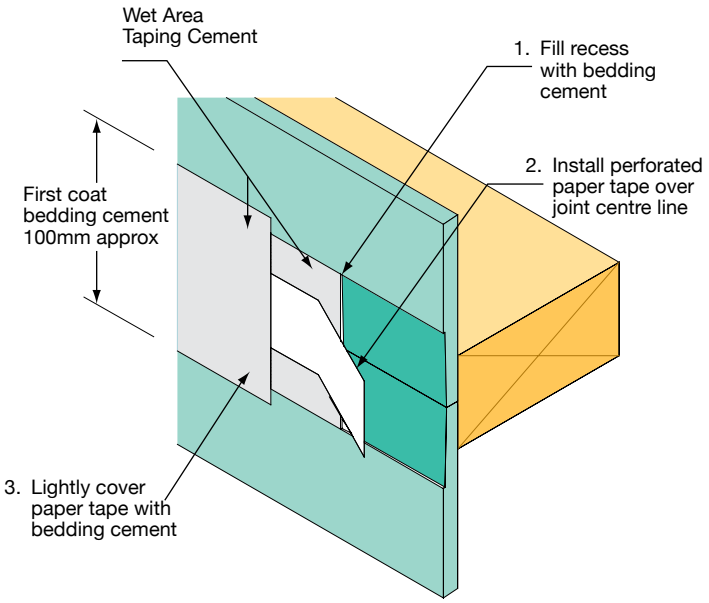


Figure 17 - Flush Jointing Internal Corner

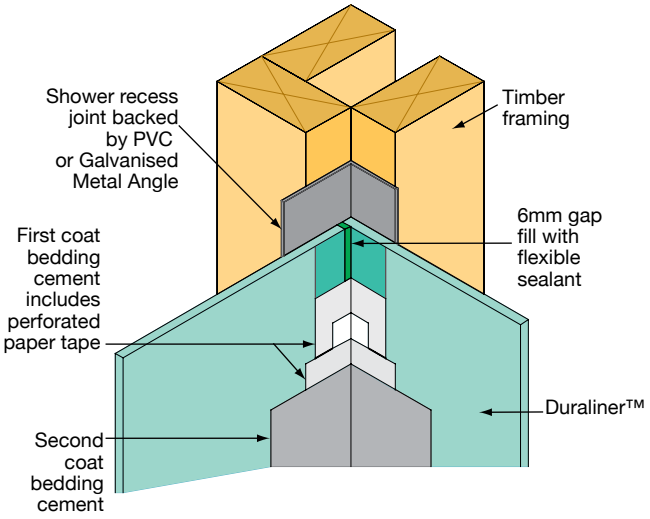
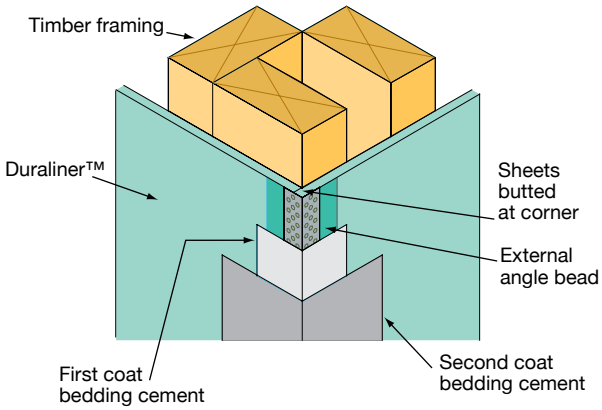


Figure 18 - Flush Jointing External Corner



BGC Fibre Cement

Dry Clad Masonry Walls

Duraliner™ can be used to cover brick and masonry construction to obtain a smooth flat finish for subsequent decoration or tiling.

Table 2 summarises the various methods recommended, their applications and limitations.

Table 2

METHOD	CLAY BRICK CONCRETE BLOCKS CONCRETE	AAC SUCH AS ECOBRICK	FIGURE	REMARKS
DIRECT ADHESIVE	✓	X	18	• Not suitable for tiled walls • Not suitable for use with Thermalite AAC base wall • Base wall must be flat and true • Base wall must provide good adhesion – not flaking or contaminated with dust, oil or grease. • Do not use in exterior applications or in areas subject to moisture penetration
TIMBER BATTEN	✓	✓	19	• Recommended for use with tile applications • Suitable for uneven and misaligned walls • May be used over flaking walls and drummy render • Provides a cavity for services if required
STEEL BATTEN OR FURRING CHANNEL	✓	✓	19	
FURRING CHANNEL & CLIP SYSTEMS	✓	✓	20	
PLASTIC NAILS	X	X	21	• For use with BGC ecobrick and AAC products • Suitable for tile applications

Direct Adhesive Fixing

Sheets may be installed horizontally or vertically.

Ensure wall is:
- Clean and dry
- Free from contaminants such as dust, oil or grease which will prevent good bonding

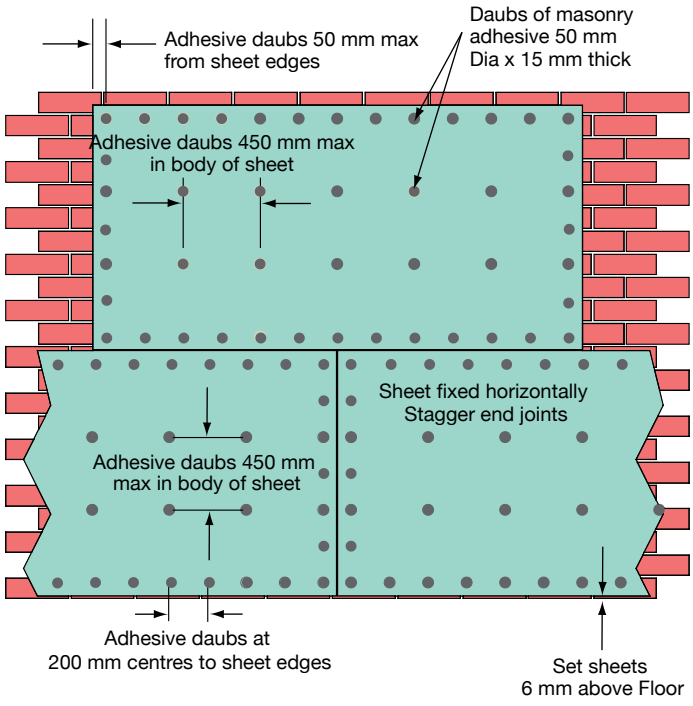
Using a good quality plaster based masonry adhesive, such as BGC Masonry Adhesive, apply 50 mm x 15 mm high daubs of adhesive to the wall. Daubs must be applied at a maximum spacing of 450 mm throughout the body of the sheet and less than 50 mm from all sheet edges. It is recommended that the daubs be spaced at 200 mm centres around the sheet edges, particularly if cornices or architraves are to be fitted.

Position the Duraliner™ sheets so that they are 6.0 mm clear of the floor.

Press the Duraliner™ lining into the adhesive, ensuring the sheet finishes flat and true; use of a straight edge is recommended.

Apply temporary restraints, either props or nails into the base wall mortar joints until the adhesive is dry – normally 24 hours. Nail the temporary restraints at about 600 mm centres around the sheet perimeter and at about 1200 mm centres in the body of the Duraliner™.

Figure 19 - Duraliner™ Installation to Masonry Wall Direct Adhesive Fixing

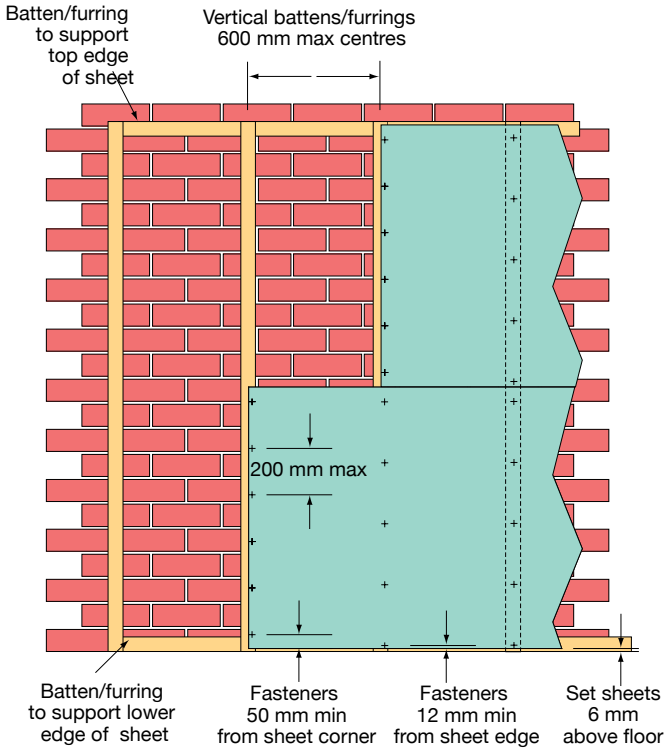


Control joints should be installed:

- To coincide with any movement control (expansion) joints in the structure.
- At the junction of any dissimilar base wall type or construction.
- To break any continuous run of Duraliner™ greater than 5.4 m.

Battens & Furrings

Figure 20 - Typical Duraliner™ Installation to Masonry Wall Battens/Furrings



Install services before installing Duraliner™.

Install Duraliner™ in accordance with Figure 2.

Sheet ends to be joined centrally over a batten or furring channel. For untiled walls fix at a maximum of 200 mm centres on sheet ends and at 300 mm maximum centres in the body of the sheet.

For tiled walls, fixings are to be at a maximum of 200 mm centres on the sheet ends and also in the body of the sheet. Where the wall is to be tiled, it is recommended that noggings be installed under all sheet joints to alleviate any sheet deflection upon impact.

Control joints should be installed:

- To coincide with any movement control (expansion) joints in the structure.
- At the junction of any dissimilar base wall type or construction.
- To break any continuous run of Duraliner™ greater than 4.2 m tiled applications or 7.2 m un-tiled applications.

Timber & Steel Battens

Sheets may be installed horizontally or vertically.

The wall should be battened out generally in a accordance with Figure 20.

Timber battens should have a minimum thickness of 40 mm to allow adequate nail penetration and holding. Timber battens that support sheet joints should have a minimum face width of 45 mm. All other battens should have a minimum face width of 35 mm.

Steel battens/furrings that support sheet joints should have a minimum face width of 38 mm. All other steel battens/ furrings should have a minimum face width of 30 mm.

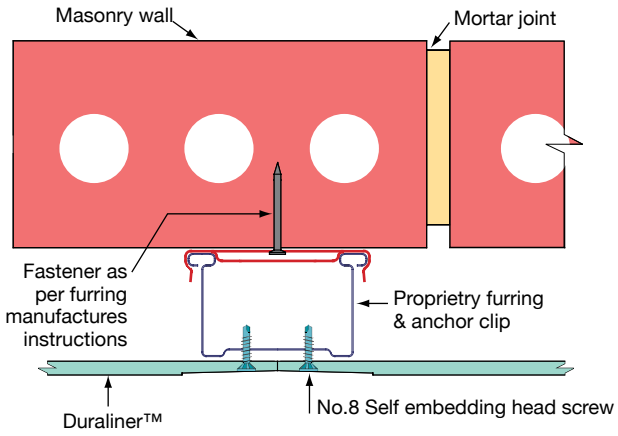
Typical steel batten systems are Rondo Part No 129 or 308 furring channels with Rondo Part No 237 clips, or Peer FC18/FC28 channels with C37 clips. See Figure 21.

Vertical battens must be provided at a maximum of 600 mm centres to suit sheet joints.

The battens should be packed to correct any misalignment or unevenness in the base wall.

Fix the battens to the base wall using suitable masonry nails or wall anchors.

Figure 21 - Duraliner™ Installation to Masonry Wall Direct Adhesive Fixing



Plastic Nails

This system is only suitable for use with standard density (approx. 550kg / m3) – Autoclaved Aerated Concrete (AAC) block walls such as BGC ecobrick. For higher density AAC use the furring channel system.

The base wall should be flat and true (maximum variation must not exceed 15 mm).

Sheets may be installed horizontally or vertically.

The sheet layout should be generally in accordance with Figure 19.

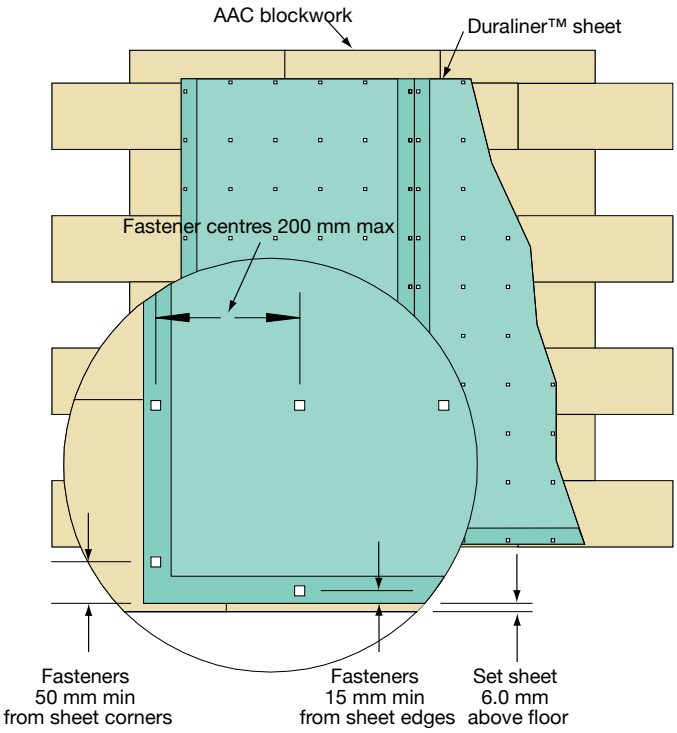
Chase the walls and install any services before installing Duraliner™.

Using an 8 mm hole punch, indent the Duraliner™ lining at all fastening points to locate and assist penetration of the plastic nails. See Figure 22.

Install the Duraliner™ sheets, and fix by hammering the plastic nails flush with the sheet surface.

Note the plastic nails must not be installed closer than 50 mm to sheet corners or closer than 15 mm to sheet edges.

Figure 22 - Duraliner™ Installation to AAC With Plastic Nails



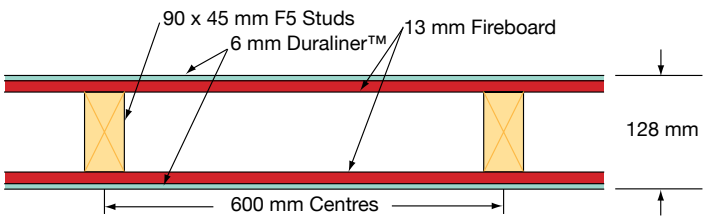
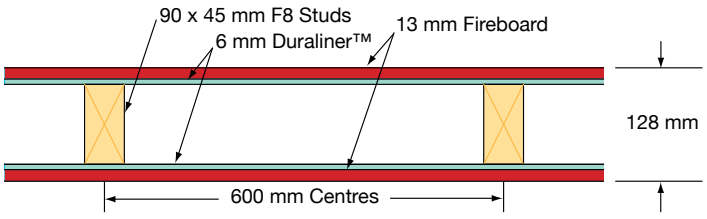
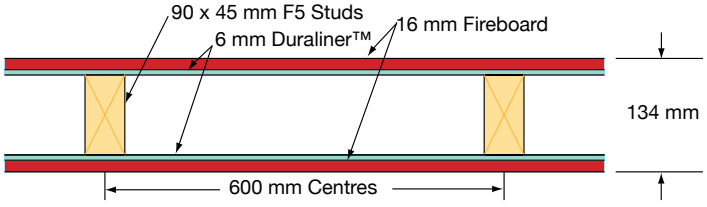
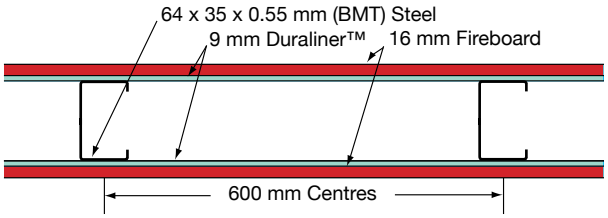
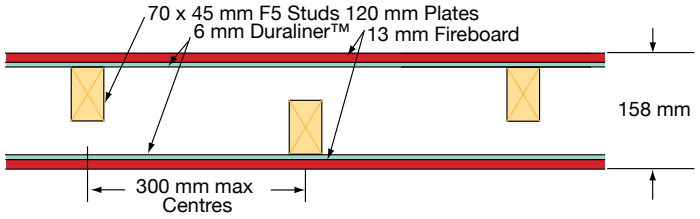
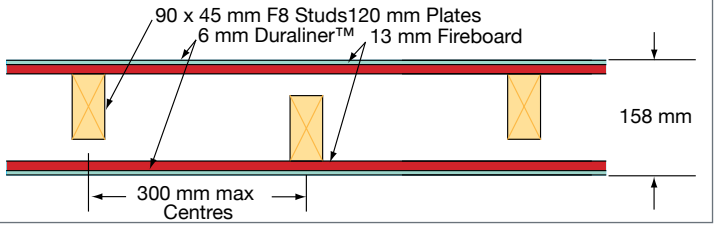
BGC Fibre Cement

Fire & Acoustic Rated Interior Walls

Duraliner™ is suitable for interior wall applications where fire and acoustic ratings are required.

Some typical construction details and their performance characteristics are depicted in Table 3.

Table 3 - Single & Staggered Stud Construction

FRL	(RW)	CAVITY INFILL	CONSTRUCTION DETAIL
60/60/60 BRANZ Test No. FR 2752-1	46	Nil	
	51	50mm Fibreglass insulation 12kg/m3	
	50	50mm Polyester Fibre insulation 12kg/m3	
60/60/60 BRANZ Test No. FR 2753-1	46	Nil	
	51	50mm Fibreglass insulation 12kg/m3	
	50	50mm Polyester Fibre insulation 12kg/m3	
90/90/90 BRANZ Test No. FR 2754-1	47	Nil	
	50	50mm Fibreglass insulation 12kg/m3	
	48	50mm Polyester Fibre insulation 12kg/m3	
120/120/120 BRANZ Test No. FR 2755-1	47	Nil	
	52*	50mm Fibreglass insulation 12kg/m3	
	52	50mm Polyester Fibre insulation 12kg/m3	
60/60/60 BRANZ OPINION No. FAR 1542-1	50	Nil	
	57*	50mm Fibreglass insulation 12kg/m3	
	55	50mm Polyester Fibre insulation 12kg/m3	
60/60/60 BRANZ OPINION No. FAR 1542-1	48	Nil	
	57	50mm Fibreglass insulation 12kg/m3	
	54	50mm Polyester Fibre insulation 12kg/m3	

The Rw Values are opinions based on tests conducted by Acoustic Laboratories Australia.
*Denotes actual test carried out by ALA (Acoustic Laboratories Australia) Pty Ltd.

Bracing

BGC Duraliner™ can be used to provide bracing to resist racking loads due to wind loadings when installed vertically.

The use of Duraliner™ to provide bracing on timber dwellings are those built to the Australian Standard for "Residential timber-framed construction".

AS1684.2-1999 (Non-cyclonic areas)
AS1684.3-1999 (Cyclonic areas)

Racking forces due to wind loading shall be calculated as per these Australian Standards.

For bracing data on other construction methods and applications, contact your BGC Fibre Cement Sales Office.

Nominal Wall Bracing

Up to 50% of the total bracing requirements can be supplied by BGC Duraliner™ sheeting installed normally. To be eligible for inclusion in calculations as nominal wall bracing:

- The minimum length of each nominal bracing panel shall be 450mm.
- Nominal bracing shall be distributed evenly throughout the building.

The Bracing Capacity for nominal bracing is given in the following table.

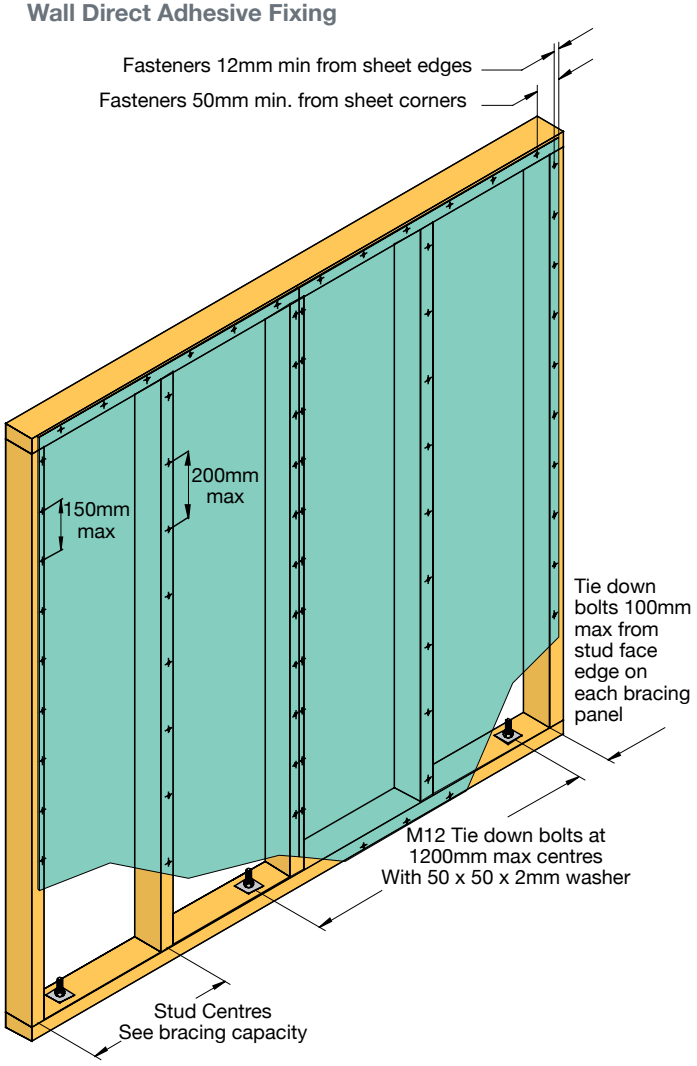
NOMINAL SHEET BRACING WALLS	
METHOD	**BRACING CAPACITY (kN/m)**
Sheeted one side only	0.45
Sheeted two sides	0.75

Structural Wall Bracing

The use of Duraliner™ is not limited to the provision of nominal wall bracing.

Figure 23 gives the design bracing capacity for panels secured with tie down bolts. This table can be considered to be an addition to Table 8.18, AS1684.2 - AS1684.3.

Figure 23 - Duraliner™ Installation to Masonry Wall Direct Adhesive Fixing



Fastener Spacing

When using tie down bolts, fasteners are to be fixed at 150 mm max around sheet perimeter and 200 mm max in the body of the sheet.

STUD CENTRE (MM)	CLADDING	BRACING CAPACITY (k/N/m)ULS*
600	One Face Only	2.40
450	One Face Only	2.70
600	Both Faces	3.40+
450	Both Faces	3.80+

*Ultimate Limit State design.

These results are from testing on JD5 Grade timber. If hard-wood frames (JD2) are used, the ULS will increase by 12.5%.

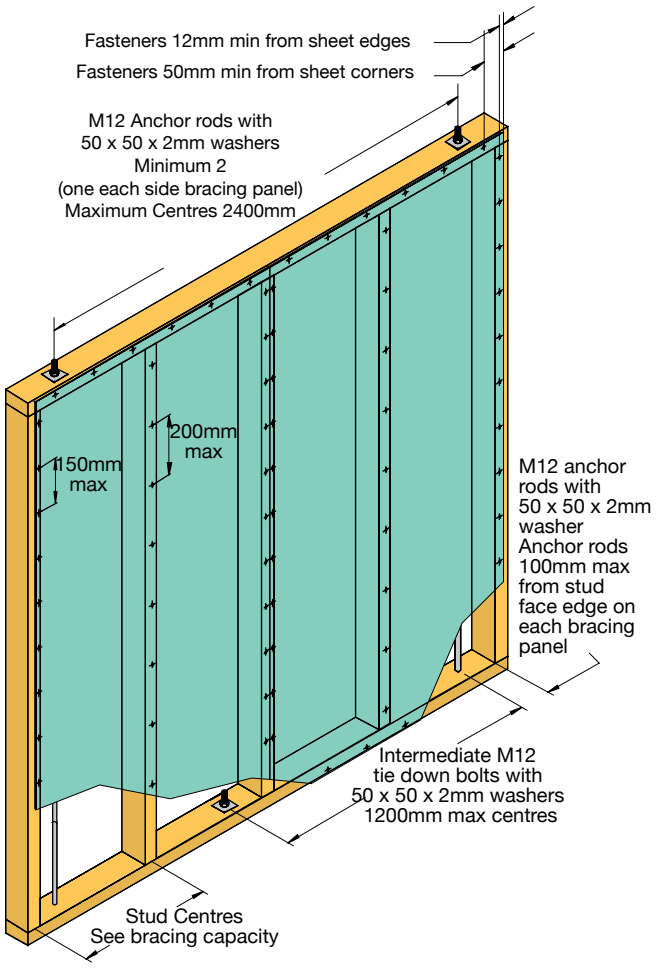
Permisable Stress Design (PSD) = $\frac{\text{Ultimate Limit State (ULS)}}{1.5}$

+Calculated through interpolation.

Bracing

Figure 24 gives the design bracing capacity for panels secured with anchor rods. This table can be considered to be an addition to Table 8.18, AS1684.2 AS1684.3.

Figure 24 - Duraliner™ Bracing Capacity Using Anchor Rods



Fastener Spacing

When using anchor rods, fasteners are to be fixed at 150 mm max around sheet perimeter and 200 mm max in the body of the sheet.

STUD CENTRE (MM)	CLADDING	BRACING CAPACITY (k/N/m)ULS*
600	One Face Only	4.95
600	Both Faces	5.10

*Ultimate Limit State design.

These results are from testing on JD5 Grade timber. If hard-wood frames (JD2) are used, the ULS will increase by 12.5%.

Permisable Stress Design (PSD) = $\frac{\text{Ultimate Limit State (ULS)}}{1.5}$

Panels Height Greater Than 2700mm

The bracing capabilities, Figure 23 and 24 are applicable to a maximum panel height of 2700mm.

For panel heights greater than 2700mm the bracing capacity shall be reduced using the panel height multipler given in the below table.

BRACING CAPACITY - PANEL HEIGHT MULTIPLIER	
WALL HEIGHT (MM)	MULTIPLIER
3000	0.9
3300	0.8
3600	0.75
3900	0.7
4200	0.64

Panel Length Less Than 900mm

The bracing capabilities, Figure 23 and 24 are applicable to a minimum panel length of 900mm. Effective bracing is achievable with panel lengths down to 450mm. Reduce the bracing capacity for panel between 450mm and 900mm long, using panel length multiplier given in the below table

BRACING CAPACITY - PANEL HEIGHT MULTIPLIER	
PANEL LENGTH (MM)	MULTIPLIER
850	0.92
800	0.83
750	0.75
700	0.66
650	0.58
600	0.50
550	0.42
500	0.33
450	0.25

Ceramic Tiling

Duraliner™ sheets used as a substrate for Ceramic tiles must be fixed to the framing with either screws or nails (adhesive fixing of sheeting is not acceptable for tiled applications). Framing must support all sheet edges.

For fixing of tiles follow the tile manufactures instructions. BGC recommend the use of a flexible tile adhesive complying with Part 1 of Australian Standard AS 2358 "Adhesives - For Fixing Ceramic Tiles". In some tropical regions flexible adhesives may not be suitable – check with tile merchant or adhesive manufacturer for recommendations.

Lighting

It is important to understand how the overall wall or ceiling appearance is affected by glancing light (light that shines obliquely across the surface of the wall or ceiling) and the choice of decoration.

Lighting design is very much a matter of cause and effect. Refer to Australian Standard AS2589 for further details on six levels of finish. It is recommended designers give consideration to the level of finish required and eliminate potential problems due to critical lighting.

Painting

BGC recommend that at least two coats of paint be applied. The choice of decoration is dependent upon the level of finish required. The paint manufacturer's recommendation on application and maintenance of the paint system must be followed.

Maintenance

Duraliner™ when used in accordance with this literature requires no direct maintenance. However in wet areas, regular checks (at least annually) must be made of the tiling system to ensure it remains watertight. Any cracked or damaged tiles, tile grout, or sealants must be replaced or repaired immediately as for new work. Any grout or sealant likely to allow leakage must be raked out and restored to original condition.

Damaged sheets should be replaced as originally installed as for new work.

Eaves & Soffits

Movement Control (Expansion) Joints

BGC Fibre Cement 6mm Duraliner™ sheets are suitable as a soffit lining in both commercial and residential building applications, where large smooth soffits or coffered ceiling areas are required.

For long runs of sheets and or large sheet areas, with set-joints, movement control (expansion) joints must occur at maximum prescribed distances, within the context of the architectural details, climate and loading conditions.

General Installation

Generally, set joint areas should not exceed 20m2, with a maximum distance of 3.6m across the sheets and a maximum of 5.4m along the sheets, as shown in Figure 1.

Other configurations may be used, dependent on the architectural details, climate and wind load conditions, providing that they do not exceed the maximum allowable area of 20m2.

Before fixing out, check the support spacing, sheet length to width layout, with the architect, to minimize number of set-joints.

For information of support spacing in high wind regions refer to the next section; Wind Loading.

Install and fix Duraliner™ sheets across the support framing, with appropriate movement control joints, see Figure 1.

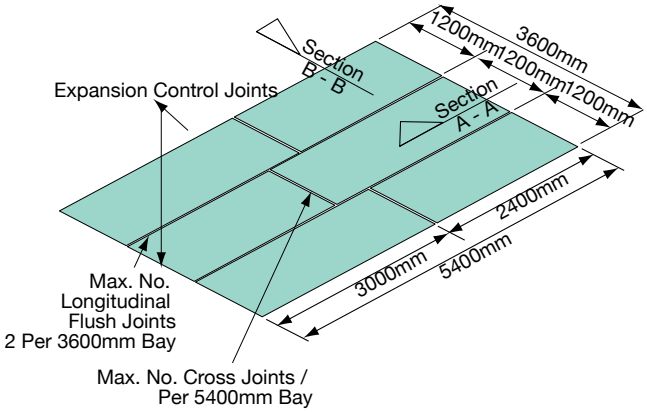
Sheets must be fixed in staggered pattern with adjacent butt set-joints on alternate support members, as shown in Figure1.

To prevent drummy sheets, Duraliner™ sheet should be firmly fixed from the centre outward.
Do not use adhesives.

Bushfire Information

Duraliner™ may be used in a Soffit/Eaves applications up to BAL40. For more information, contact your local BGC Fibre Cement office.

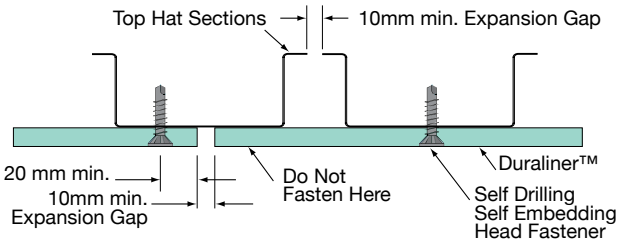
Figure 1 - Duraliner™ Movement Control Bay Layout, General Configuration.



The configuration shown may vary dependent on the architectural details, climatic and wind load conditions.

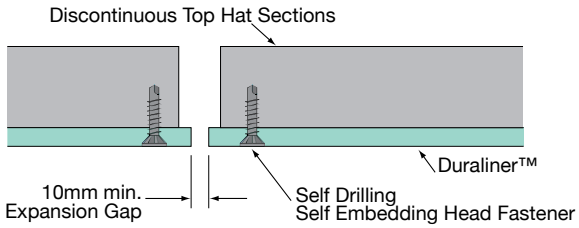
Duraliner™ soffit sheet supporting members must be discontinuous across the movement control joints, as shown in Figure 2 and 3.

Figure 2 - Longitudinal Movement Control Joint



One sheet edge must be free to move across the adjacent supporting member.

Figure 3 - Transverse Movement Control Joint



Supporting members must be discontinuous across the joint.

It is preferable to fix set-joint sheets to an independent support system, such as clip-fixed CFS galvanized steel furring channels, designed to allow for ventilation of the ceiling space and hence obviate heat build-up and consequent adverse thermal movements.

Where, for severe climatic, design and or other reasons, this is not possible and or practical, an alternative is to set out the Duraliner™ sheets with movement control joints, at a maximum spacing of 2.4 m; for 1200mm wide sheets or 1.8m; for 900mm wide sheets.

Where the ceiling space is less than 300mm deep, adverse thermal conditions may prevail; therefore provision should be made for ventilation slots at the eave's or soffit's outer and inner edges, to ventilate the ceiling space.

Duraliner™ sheets must not be fixed directly to CFS Cee section galvanized steel or hot-rolled steel purlins, under insulated or un-insulated metal deck roofing.

For exterior weather protected ceiling areas, setting and jointing compound systems must be of the water resistant type, in accordance with AS3740.

Wind Loading

The following supportive information is to assist in the design and fixing 6mm Duraliner™ in high wind areas.

Prior to fixing sheets in place, ensure that the supporting structural systems comply with the BCA and have been certified by a professional engineer.

Design to AS 4055-1992

AS 4055-1992 is applicable for residential applications and the tabulated data is suitable for both timber and lightweight CFS steel framing systems.

Warranty

BGC warrants its products to be free from defects caused by faulty manufacture or materials. If any of its products are so defective the Company will at its option, repair or replace them, supply equivalent replacement products or reimburse the purchase price.

This warranty shall not apply to any loss or consequential loss suffered through or resulting from defects caused by faulty manufacture or materials.

Fittings or accessories supplied by third parties is beyond the control of BGC and as such is not warranted by BGC.

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BGC Fibre Cement is a proud Australian owned manufacturer of fibre cement products.

BGC Fibre Cement provides builders, developers and architects with a range of design alternatives and innovative products, such as:

EXTERIOR PRODUCTS AND APPLICATIONS

Innova™ range of products:

- Duragrid ™ Residential and Duragrid ™ Light Commercial
  A lightweight façade giving a modern and durable finish.
- Duracom™
  A compressed fibre cement facade system.
- Nuline™
  A weatherboard style cladding system.
- Stonesheet™
  A purpose designed substrate for stone tile facades.

BGC Fibre Cement range of products:

- Durasheet™
  Ideal for the cladding of gables and lining of eaves. Can also be used on commercial soffits and cladding on non impact areas.
- Duraplank™
  Available in Smooth, Woodgrain and Rusticated finishes, is ideal for exterior cladding of upper storey conversions or ground level extensions.
- Duratex™
  A base sheet used for textured coatings on exterior wall applications.
- Duralattice™
  Square or diamond patterned lattice, suitable for screens, pergolas and fences.
- Compressed sheet
  Used for domestic, commercial sheet for wet areas, flooring, partitions, exterior decking, fascia and facade cladding.
- Duralux™
  Suitable for exterior applications where it will be sheltered from direct weather.
- Duraliner™
  Suitable for eaves and soffits where it will be sheltered from direct weather.

INTERIOR PRODUCTS AND APPLICATIONS

- Duralux™
  An interior liningboard suitable for ceilings and soffits.
- Duraliner™
  An interior liningboard, this is the perfect substrate for tiles and is ideal for wet areas.
- Ceramic Tile Floor Underlay
  A substrate for ceramic and slate floor tiles.
- Vinyl and Cork Underlay
  A substrate for vinyl floors.

Quality System

Quality Endorsed Company

Safe working practices - Please wear a P1 or P2 mask and safety goggles (approved to AS/NZW1337 standards) whilst cutting or installing Duraliner™. Duraliner™ can be safely handled during unloading or stacking without the use of these precautions.
Cleaning up - Always wet down your work area when cutting Duraliner™, to ensure that dust is managed.
Dispose of any vacuumed dust with care and using containment procedures.

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