

Durasheet™ Fibre Cement

fibre
cement
sheets

Durasheet™ -
tough and
durable



Build it better with **BGC**

BGC

Fibre Cement

Australian Owned & Manufactured www.bgc.com.au/fibreceement

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.



BGC DuraSheet™ is designed for the cladding of gable ends, eaves, soffits, car ports and verandah linings of timber and steel framed buildings.

4.5mm thickness is generally used in timber framed residential buildings for soffit linings and the cladding of features such as gable ends. 6.0mm thickness is recommended for commercial applications, cyclonic wind zones and steel framed constructions.



Durasheet™

- Available in two thicknesses to suit both residential and commercial applications
- General purpose sheet
- 6.0mm suitable for cyclonic wind zones
- Classified as Type A Category 2 for external use
- Can be used on timber and steel framed buildings

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Product Description

BGC Durasheet™ is a general-purpose fibre cement sheet for external applications. It is recommended for the cladding of gable ends, eaves, carport and verandah linings of timber or steel framed buildings.

Durasheet™ is a smooth flat square edged sheet and is manufactured in nominal thickness of 4.5 mm and 6.0 mm.

4.5 mm Durasheet™ is generally used in timber framed residential buildings for soffit linings and the cladding of features such as gable ends.

6.0 mm Durasheet™ is recommended for commercial applications, cyclonic wind zones and steel framed construction.

Product Information

Durasheet™ 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.

Durasheet™ fibre cement sheets are manufactured to conform to the requirements of AS2908.2 Cellulose-Cement Products and are classified as Type A Category 2 sheet for external use.

Mass

The approximate weight of Durasheet™ at equilibrium moisture content (7% moisture) is as tabulated.

NOMINAL THICKNESS (mm)	APPROX. WEIGHT (KG/m ²)
4.5	7.1
6.0	9.5

Fire Resistance

Durasheet™ has been tested by the CSIRO – Building, Construction and Engineering Division, in accordance to Australian Standard AS1530.3 – 1989. See report numbers FNE 6966 and FNE 7529.

This report deemed the following Early Fire Hazard Properties:

- Ignition Index 0
- Spread of Flame Index 0
- Heat Evolved Index 0
- Smoke Developed Index 0-1

Quality Systems

BGC Fibre Cement manufactures Durasheet™ under the rigorous Quality Management System of the International Standard ISO 9002:1994, and is the holder of Licence Agreement number QEC2955/13.

Sheet Sizes

THICKNESS (mm)	LENGTH (mm)	WIDTH (mm)				
		450	600	750	900	1200
4.5	1800				x	x
	2100					x
	2400	x	x	x	x	x
	2700				x	x
	3000				x	x
6.0	1800				x	x
	2400				x	x
	2700				x	x
	3000				x	x

Handling & Storage

Durasheet™ must be stacked flat, up off the ground and supported on level equally spaced (max 450mm) gluts.

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.

Health and Safety

BGC Durasheet™ as manufactured 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.

Avoid Dust Inhalation

When cutting sheets, use the methods recommended in this literature to minimise dust generation.

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

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

Sheet Cutting & Drilling

Durasheet™ may be cut to size on site. If using power tools for cutting, drilling or sanding they must be fitted with appropriate dust collection devices or alternatively an approved (P1 or P2) dust mask and safety glasses should be worn.

It is recommended that work always be carried out in a well-ventilated location.

The most suitable cutting methods are:

- Score and Snap**
 Score the sheet face 4 or 5 times with a 'score and snap' knife. Support the scored edge and snap the sheet upward for a clean break.
- Hand Guillotine**
 Cut on the off-cut side of the line to allow for the blade thickness.
- Notching**
 Notches can be made by cutting the two sides of the notch. Score along the back edge then snap upwards to remove the notch.
- Drilling**
 Use normal high-speed drill bits. Do not use the drill's hammer function. For small round holes, the use of a hole-saw is recommended.

For small rectangular or circular penetrations, drill a series of small holes around the perimeter of the cut out. Tap out the waste piece from the sheet face while supporting 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. Next, form a hole in the centre of the opening (refer 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.

Fasteners

Timber Framing

Durasheet™ is to be fixed to timber using 30 x 2.0mm galvanised flat head nails. Nails should be driven just flush with the sheet face. Do not overdrive nails.

30x2.0mm Galvanised Flat Head Nail

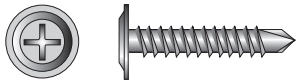


When using nail guns, if variation occurs the gun should be set to under-drive and the nails tapped home using a hammer.

Lightweight Steel Framing

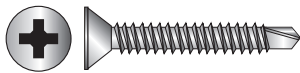
Use No.8x20 Galvanised wafer head screws for fixing 4.5 mm Durasheet™ eaves and soffit linings to lightweight steel framing. 4.5 mm Durasheet™ should not be used for cladding steel framed walls.

No. 8x20mm Galvanised Wafer Head Screw



6.0 Durasheet™ claddings are fixed to lightweight steel framing using No.8x20 Galvanised self-embedding head screws. Screws should be driven just flush with the sheet face. Do not overdrive screws. Self-embedding head screws must not be used with 4.5 mm Durasheet™.

No. 8x20mm Galvanised Self Embedding Screw



Fixing Requirements

Sheets to be fixed along all sheet edges over studs on wall cladding applications. Fixings centres must not exceed 200 mm for wall cladding and 300 mm for soffit linings.

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

Do not overdrive fasteners.

The sheet must be held firmly against the framing when fixing to ensure breakout does not occur on the back.

Coastal Areas – The durability of galvanised nails and screws used for external cladding in coastal or similar corrosive environments can be as low as 10 years.

For this reason BGC recommend the use of stainless steel or class 3/4 fasteners within 1km of the coast or other large expanses of salt water.

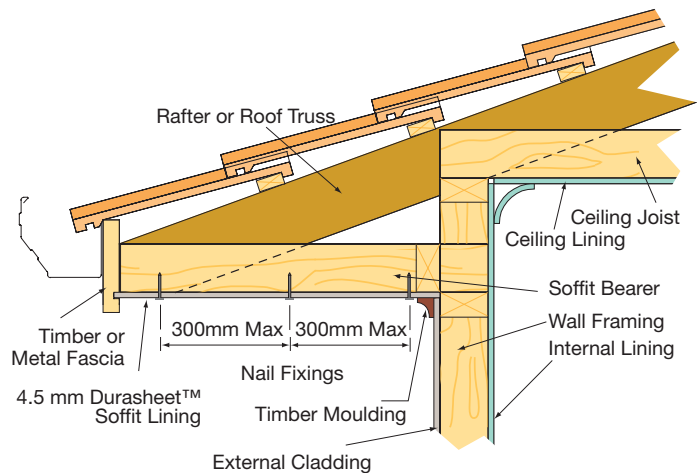
Sarking

In wall cladding applications the installation of a vapour permeable perforated sarking between Durasheet™ and the framing is recommended.

Under windy conditions the building's internal pressure will generally be less than the external air pressure, this will tend to draw water through flashing and seals if sarking is not used.

Use of a reflective sarking will enhance the insulation properties of the cladding system.

Figure 1 - Typical Boxed Eaves Lining



Fixing of Soffits / Eaves Linings

The sheet edges must be supported either by nailing at 300 mm maximum centres or by a construction feature such as a grooved fascia board or along an external brick wall.

The sheets may be joined off framing provided PVC joiners are used.

Where sheets are joined off framing, the bearer centres of the span are not to be greater than 450 mm for 4.5 mm Durasheet™ or 600 mm for 6.0 mm Durasheet™.

Where the external walls are to be rendered or texture coated, it is important that a vee joint be created on the coating at the intersection of the Durasheet™ eave lining and the texture coating on the external wall.

Where a metal roof is installed directly above soffits, severe thermal movement may occur. Where Durasheet™ is used, it is preferred the roof be vented to allow emission of hot air as well as providing a reduction in roof space temperature.

For eaves to 600 mm maximum width:

- Soffit bearers must be provided at a maximum of 600 mm centres.

For eaves 600 mm ~ 1200 mm wide:

- Soffit bearers must be at a maximum of 450 mm.

Carport Linings

Typically, when lining a carport with Durasheet™, sheets are to be installed at right angles to the ceiling joists using PVC sheetholders to support all sheet joints.

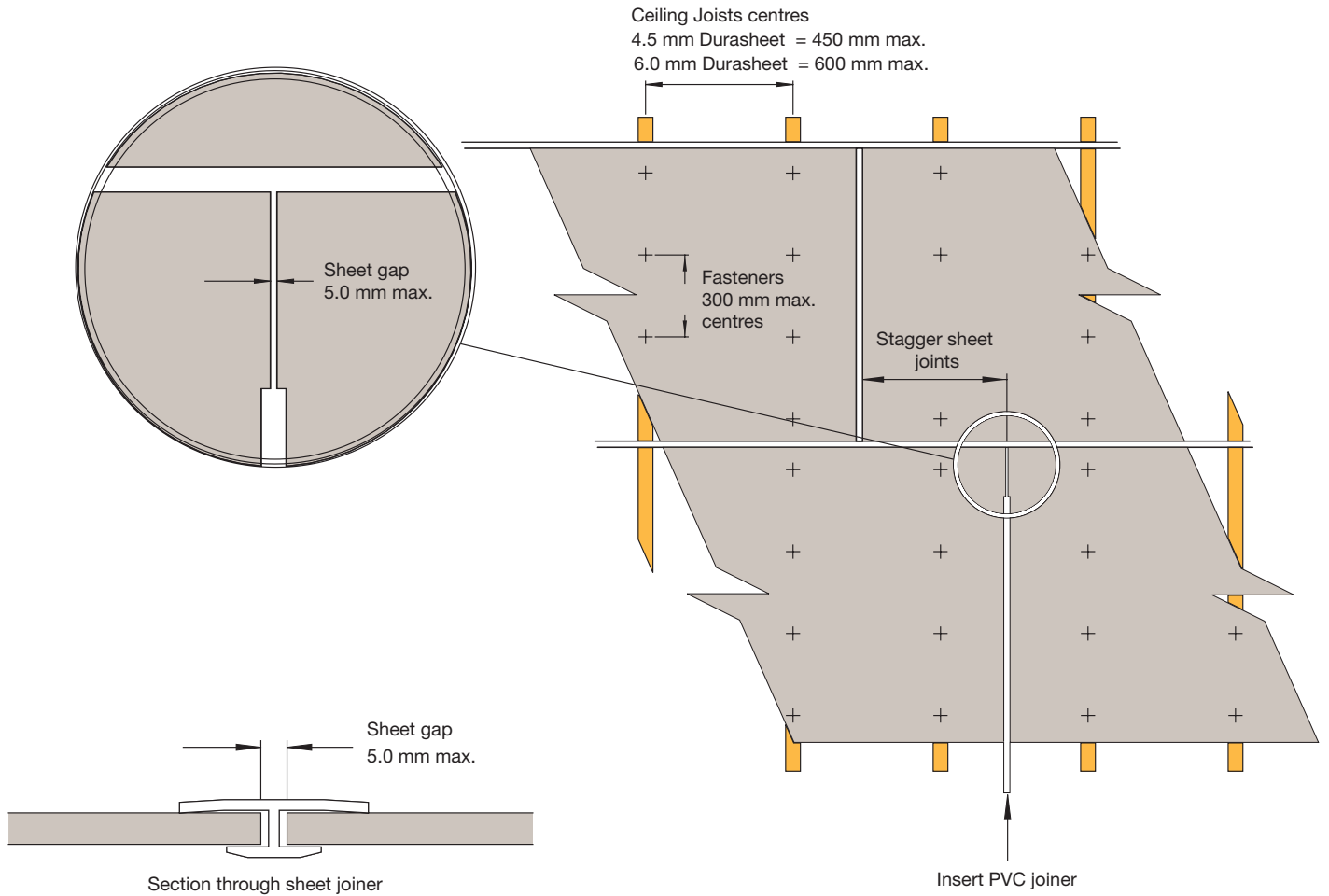
The ends of the sheets should be staggered with a maximum gap of 5.0 mm to facilitate the PVC sheetholder.

The sheets must be nailed at 300 mm maximum centres along each ceiling joist.

The outer sides and ends of perimeter sheets must be supported by framing and nailed at 300 mm maximum centres.

Durasheet™ must not be fixed directly to the bottom chord of roof trusses. Timber battens or metal furrings should be installed.

Figure 2 - Carport Lining



External Cladding

Framing

- 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:
450 mm centres for 4.5 mm Durasheet™
600 mm centres for 6.0 mm Durasheet™
- Noggings must be spaced at a maximum of 1200 mm centres. For horizontal sheet fixing noggings must support the sheet joints
- Durasheet™ cladding must not be joined off the framing.

Timber Framing

Timber framing must comply with AS 1684.2 & .3 -1999 National Timber Framing Code.

Durasheet™ 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.

Metal Framing

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

Durasheet™ may be fixed directly to lightweight metal framing. The metal framing must not exceed 1.6 mm in thickness.

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

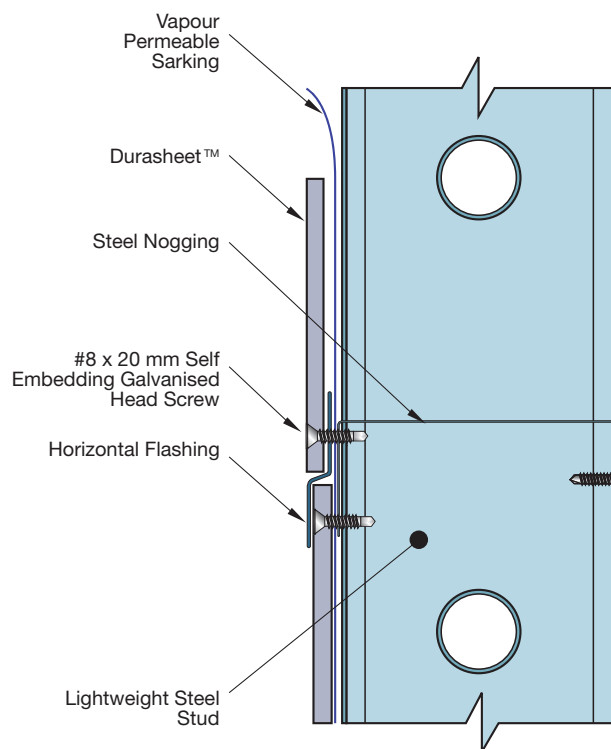
Timber battens must have a minimum thickness of 40 mm to allow adequate nail penetration. Battens supporting sheet joints must have a minimum actual face width of 45 mm

Sheet Layout for Cladding

Information in this publication is satisfactory for low-rise (up to two story) domestic and light commercial buildings in non-cyclonic regions.

6.0 mm Durasheet™ cladding may be fixed vertically or horizontally. However most external cladding is installed vertically. If horizontal joints are used then adequate flashing must be fitted to prevent ingress of water, see Figure 3.

Figure 3 - Horizontal Joint Detail



Notes:

- Framing must support all sheet joints.
- When sheets are fixed more than one sheet high, vertical joints should be staggered by at least one stud (600mm typical).
- Durasheet™ is to be fixed along all sheet edges over studs at 200 mm maximum fixings centres.
- Do not place fixings closer than 12mm from sheet edges, or closer than 50mm from sheet corners.

Wall Abutment

Control Joints must be employed when an addition is constructed onto an existing building or when a masonry wall adjoins a timber or steel framed construction.

Control Joints should be constructed using 9 mm diameter backing rod and polyurethane sealant on abutment to existing masonry walls.

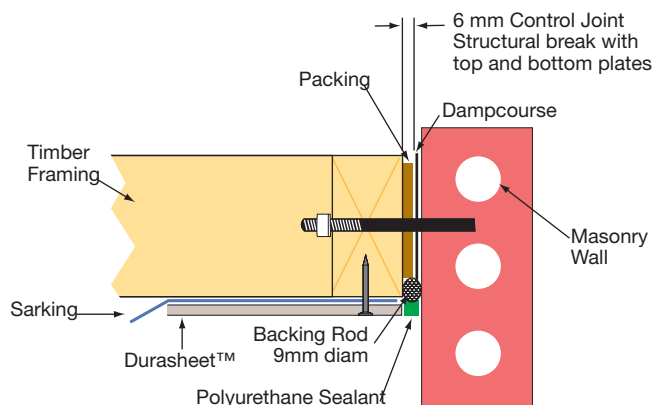


Figure 4 - Sheet Joint Light Weight Steel Framing

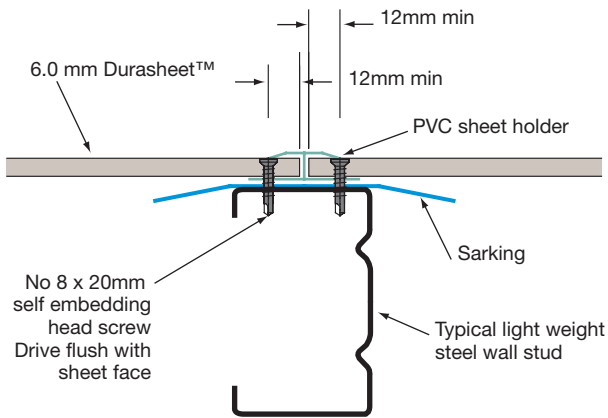


Figure 5 - Internal Corners PVC Sheet Joinery

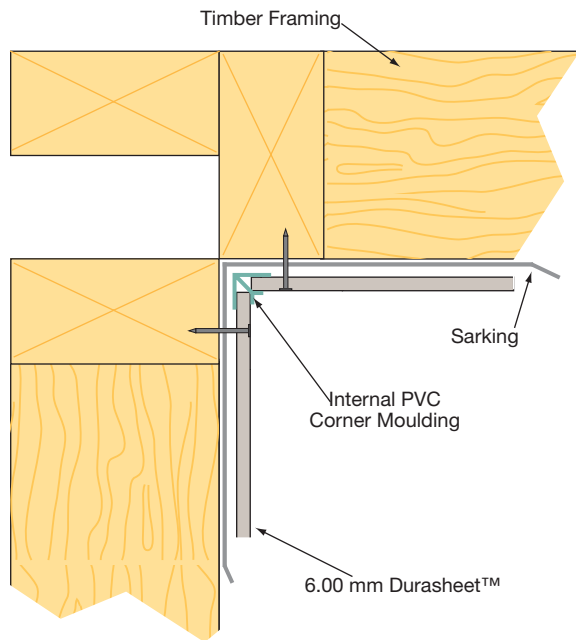
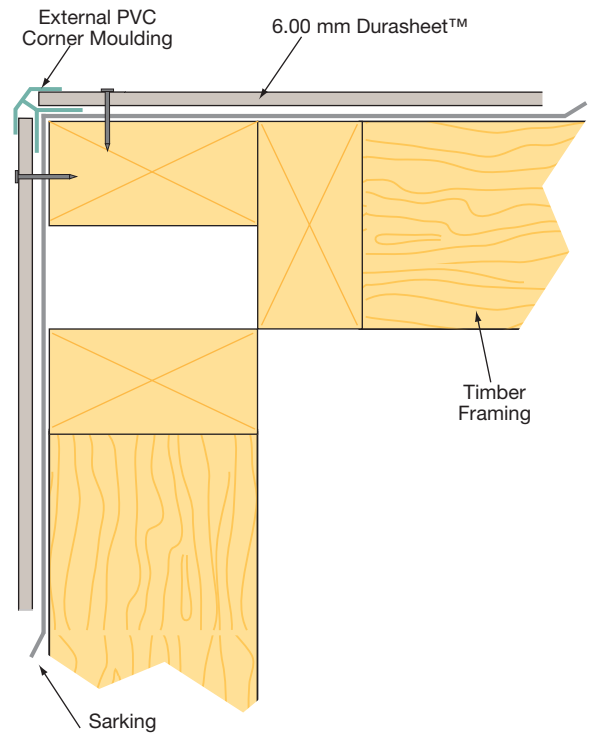


Figure 6 - External Corners PVC Sheet Joiners

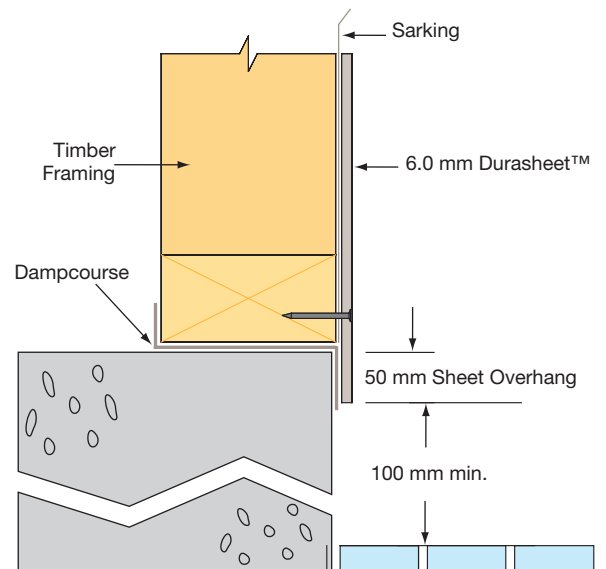


Ground Clearance

Durasheet™ must not be used in situations where it will be below ground or where it will be buried in the ground.

A minimum of 100 mm must be maintained from the bottom edge of the sheet to the ground, see Figure 7.

Figure 7 - Ground Clearance



Bracing

BGC 6.0 mm Durasheet™ can be used to provide bracing to resist racking loads due to wind loadings when installed vertically.

Where Durasheet™ is used to provide bracing on timber dwellings, the Australian Standard for “Residential timber - framed construction” must be adhered to:

AS 1684.2 - 1999 (Non cyclonic areas)
AS 1684.3 - 1999 (Cyclonic areas)

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

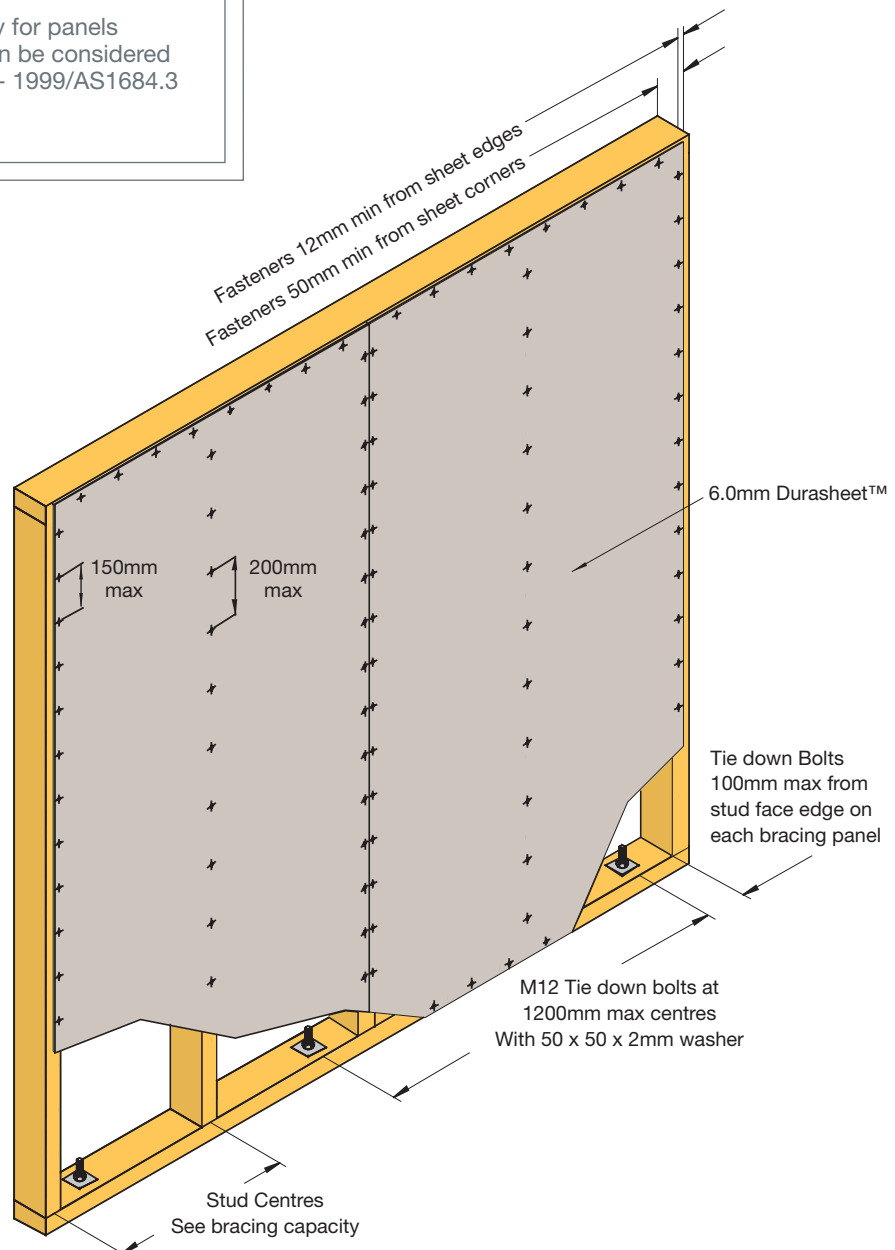
For bracing data on other construction methods and applications, contact your BGC Fibre Cement Sales Office.

Structural Wall Bracing

The use of 6.0 mm Durasheet™ is not limited to the provision of nominal wall bracing.

Figure 8 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- 1999/AS1684.3 - 1999.

**Figure 8 - 6.0 mm Durasheet™
Bracing Capacity
Using Tie Down Bolts**



Nominal Wall Bracing

To be eligible for inclusion in calculations as nominal wall bracing:

- 6.0 mm Durasheet™ must be fixed along all sheet edges over studs and top/bottom plates at 200 mm maximum centres.
- 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

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 (kN/m)ULS*
600	One Face Only	3.0
450	One Face Only	3.15
600	Both Faces	4.28+
450	Both Faces	4.49+

*Ultimate Limit State design.

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

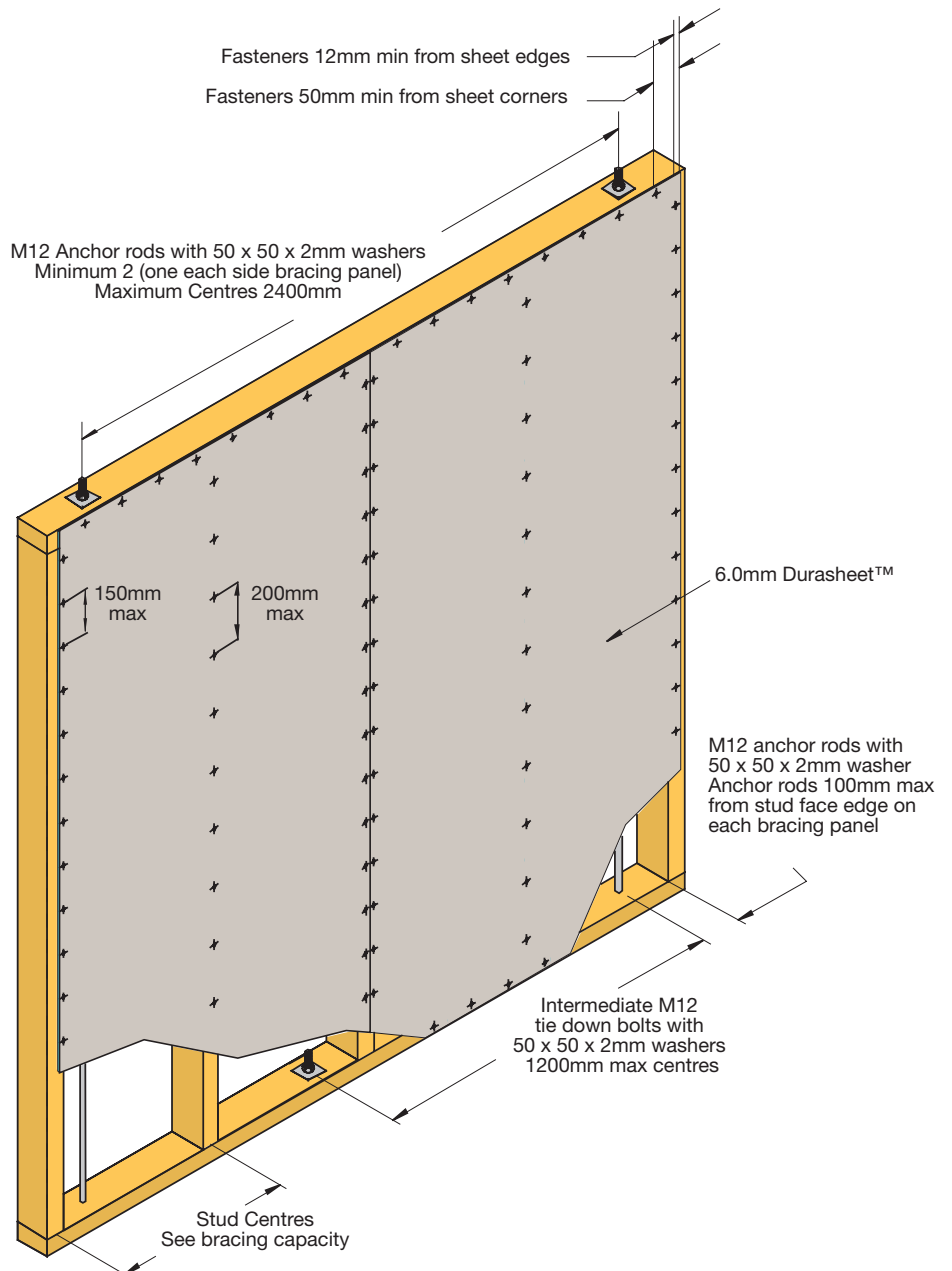
Permissible Stress Design (PSD) = $\frac{\text{Ultimate Limit State (ULS)}}{1.5}$

+Calculated through interpolation.

Bracing

Figure 9 gives the design bracing capacity for panels secured with anchor rods. This table can be considered to be an addition to Table 8.18, AS1684.2-1999/AS1684.3 - 1999.

**Figure 9 - 6.0 mm Durasheet™
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	5.55
600	Both Faces	7.64+

*Ultimate Limit State design.

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

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

+Calculated through interpolation

Panels Height Greater Than 2700mm

The bracing capabilities, Figures 8 and 9 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 multiplier given in the below table.

BRACING CAPACITY - PANEL HEIGHT MULTIPLIER	
WALL HEIGHT (mm)	MULTIPLIER
3000	0.90
3300	0.80
3600	0.75
3900	0.70
4200	0.64

Panel Length Less Than 900mm

The bracing capabilities, Figures 8 and 9 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

Wind Loading

The following information is provided to assist in designing for wind loading, in particular for cyclonic areas for 6.0 mm Durasheet™.

Design to AS 4055-1992

AS 4055-1992 is applicable to domestic housing. The tabulated data is applicable to all areas and covers the use of both timber and lightweight steel framing.

Design to Queensland Standard

The data presented is equally applicable for use when designing to the Queensland Standard. The following table cross-references the equivalent Wind Classifications.

NON-CYCLONIC		CYCLONIC	
AS 4055-1992	Queensland Standard	AS 4055-1992	Queensland Standard
N1	W28N	-	-
N2	W33N	-	-
N3	W41N	C1	W41C
N4	W50N	C2	W50C
N5	W60N	C3	W60C
N6	W70N	C4	W70C

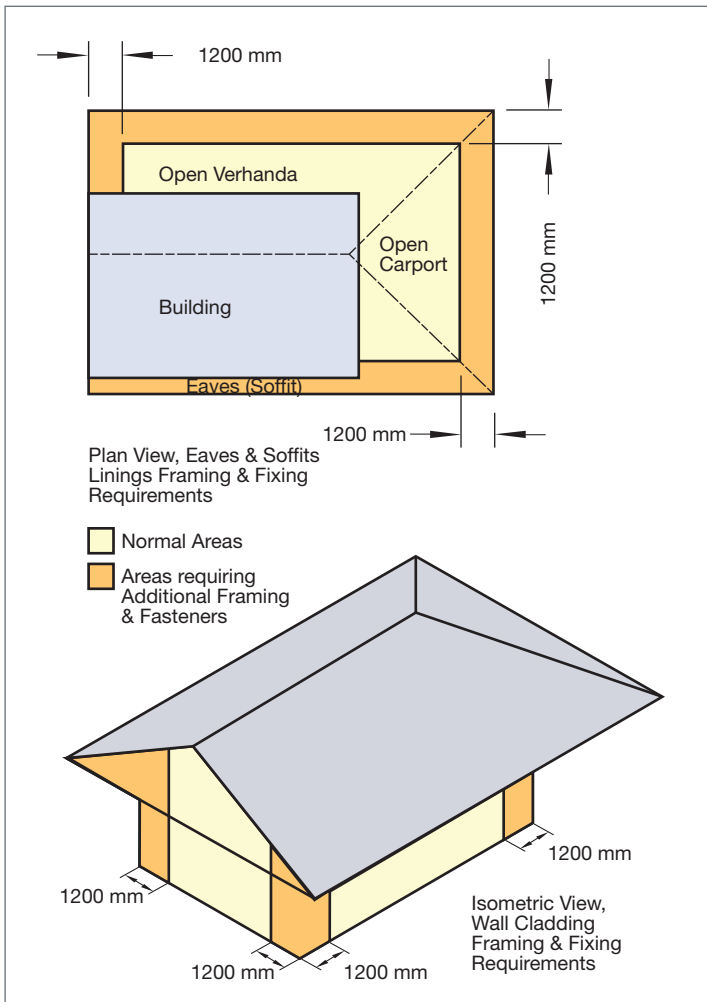
Design to AS 1170 Part 2-1983

The tabulated data is applicable to Region C (Tropical Cyclone areas) including Darwin and 6.0 mm Durasheet™ is approved for inclusion in the Darwin Deemed to Comply manual.

- 6.0 mm Durasheet™ Wall Cladding - M/222/1
14th November 1997
- 6.0 mm Durasheet™ Soffit Cladding - M/222/2
14th November 1997

Framing Centres (mm max.)	300						
	400						
	450						
	600						
Wind Classification AS 4055-1992	Non Cyclonic	N1	N2	N3	N4	N5	N6
	Cyclonic			C1	C24	C3	C4
Fixing Centres (mm max.)	200						
	150						

Framing and Fixing Centre Wind Loading - AS 4055 - 1992



Freeze Thaw

Durasheet™ cladding subject to freeze/thaw conditions must be painted.

Durasheet™ should not be used in situations where it will be in direct contact with snow or ice for prolonged periods.

Painting

To enhance both the appearance and performance of Durasheet™, BGC recommend that at least two coats of a water-based paint be applied. The paint manufacturer's recommendation on application and maintenance should be followed.

Maintenance

Durasheet™ when used in accordance with this literature requires no direct maintenance.

To guard against water penetrating the structure and damaging the framework, annual inspections of the cladding system should be carried out. Check flashing, sealant, joints and paint work.

Flashing and sealants must continue to perform their design function. Damaged sheets should be replaced as originally installed.

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.

To contact your nearest BGC stockist, please call:

Adelaide
Telephone
08 8347 0844

Brisbane
Telephone
07 3711 4744

Melbourne
Telephone
03 9392 9444

Perth
Telephone
08 9334 9400

Sydney
Telephone
02 9632 2100

New Zealand
Telephone
0011 64 9264 1457

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BGC Fibre Cement is a proud Australian owned manufacturer of Fibre Cement 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 who can assist with all specification and design information.

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

External products and applications:

- NuLine™ – weatherboard cladding system.
- Durasheet™ – used for external applications. Durasheet is ideal for the cladding of gables and lining eaves, carports and verandahs. Can also be used for commercial soffits and external cladding on non impact areas.
- Duratex™ – a base sheet used for textured coatings on external wall applications.
- Compressed sheet – used for domestic, commercial sheet for wet areas, flooring, partitions, external decking, fascia and facade cladding.
- Duraplank™ – available in Smooth, Woodgrain and Rusticated finishes, Duraplank™ is ideal for external cladding of upper storey conversions or ground level extensions.

- Duracom™ – compressed fibre cement facade system
- Silhouette™ – a fibre cement plank and uPVC feature strip exterior cladding system.
- Stonesheet™ – purpose designed substrate for stone tile facade.
- Duralattice™ – square or diamond patterned lattice, suitable for screens, pergolas and fences.

Internal products and applications:

- Duraliner™ – an internal lining board, this is the perfect substrate for tiles and is ideal for wet areas.
- Duralux™ – internal lining board suitable for ceilings and soffits.
- Ceramic tile underlay – a substrate for ceramic and slate floor tiles.
- Vinyl cork floor coverings – a substrate for vinyl floors.



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 Durasheet™. Durasheet™ can be safely handled during unloading or stacking without the use of these precautions.

Cleaning up - Always wet down your work area when cutting Durasheet™, to ensure that dust is managed. Dispose of any vacuumed dust with care and using containment procedures.