



# Compressed Fibre Cement

## Technical Specification | Aug 2012

### Product Description

BGC Compressed Fibre Cement sheeting is a high density fibre cement sheet which is ideally suited as a structural substrate for interior floors in dry or wet areas of framed constructions; including upper stories and transportable buildings. BGC Compressed Fibre Cement is equally suited for use in the cladding of exterior decks.

### Compliance – Documents referred to at time of writing.

All work shall be carried out in accordance with the relevant New Zealand regulatory building codes and standards. This document must be read in conjunction with and in accordance to:

Compliance Document for New Zealand Building Code (NZBC). This document is limited to building within the scope of NZS 3604:2011 - Timber-framed buildings and AS/NZS 1170: Structural design actions.

### Sheet Sizes & Mass

BGC Compressed Fibre Cement sheeting is available in the following sizes. The approximate weight of BGC Compressed Fibre Cement sheeting at equilibrium moisture content (7% moisture) is as tabulated.

Thickness (mm)	Width (mm)	Length (mm)		Mass (kg/m <sup>2</sup> )
		1800	2400	
15	1200		•	28
18		•	•	33
24*			•	44

\* 24mm available on an order only basis. Please confirm quantity requirements and availability with BGC Fibre Cement.

### Load Consideration

Please refer to the load tables as provided at the rear of this document.

### Framing

BGC Compressed Fibre Cement sheeting can be fixed to either timber or lightweight steel floor framing.

#### General

- All joist and trimmer face widths must be minimum 45mm wide
- BGC recommend sheets to be laid with the long edge across the joists; sheet ends to be supported by joist
- When sheets are laid with the long edge parallel to the joists; trimmers must be added so that all sheet edges and joints are supported
- Sheets shall be fixed to support framing at maximum 400mm centres
- All BGC Compressed sheet edges must be supported by framing except where a drip edge is to be formed.

#### Floor framing set-out:

Floor Type	Thickness (mm)	Max. Joist Spacing (mm)	Max. Block / Nog Spacing (mm)
Tiled	15	400	1200
	18		
Un-Tiled	15	400	1200
	18	600	1200

Joists must be spaced at maximum 400mm for 15mm thick sheets and maximum 600mm for 18mm thick sheets. Timber or hot dipped galvanised steel joists are suitable framing members for exterior use.

### Interior Floors

BGC Compressed Fibre Cement sheeting can be used internally as structural flooring that can be fixed directly over floor joists. BGC Compressed Fibre Cement sheeting can be used where high impact applications or water resistant flooring is required.

BGC Compressed Fibre Cement sheeting may also be finished with a variety of floor coverings.

**Tiled Floors** - BGC Compressed Fibre Cement sheeting is ideally suited as a substrate for ceramic tiled floors in areas such as kitchens, bathrooms and laundries.

In areas where floor waste drains are not required, for example kitchens, ceramic floor tiles may be fixed directly to the BGC Compressed Fibre Cement sheeting.

**Wet Areas** - BGC Compressed Fibre Cement sheeting must be covered with a water-proof membrane (to manufacturers' specification) in a Wet Area application prior to tiling.

**NB:** Also refer to Sheet Joints section of this document.

### Exterior Decking

BGC Compressed Fibre Cement sheeting can be used as the substrate for a variety of exterior decking applications such as above ground pool surrounds, verandas and sun decks.

**Framing is required to support all sheet edges. The exception being the outer edge of decks where a drip mould is to be installed.**

**Enclosed / Raised Decks: Habitable Area Below** - Prior to tiling and where a habitable living space is below the deck BGC Compressed Fibre Cement sheeting must be covered with a water-proof membrane (to manufacturers' specification). As local body requirements differ, please confirm ruling specifics with the Territorial Authorities 'District Plan'.

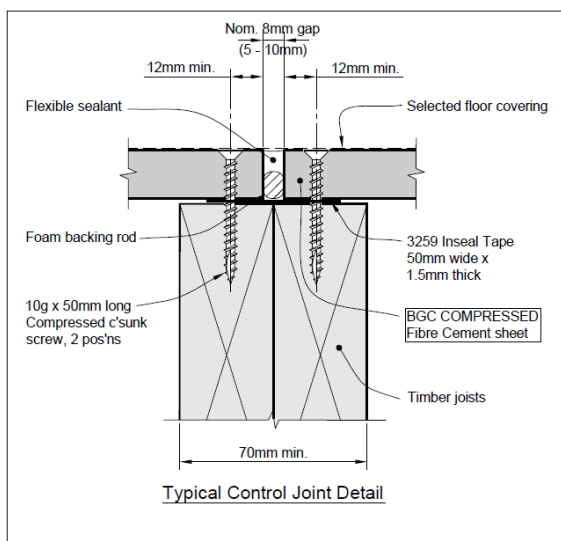
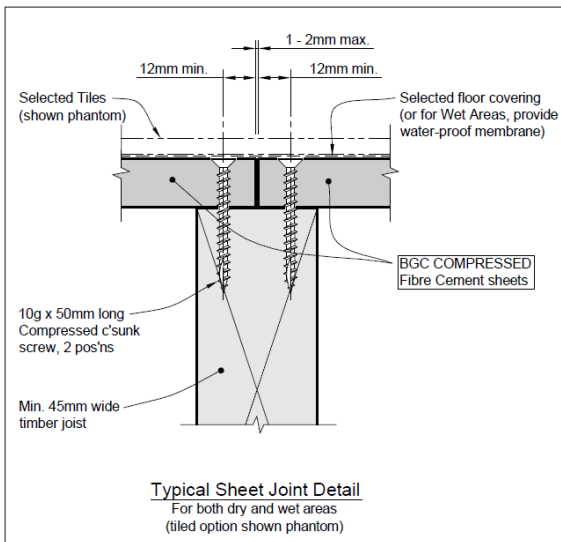
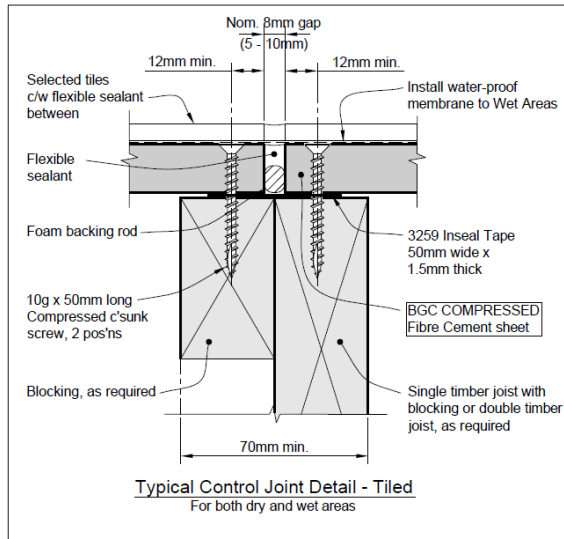
## Sheet Joints

**Internal Sheet Joints** – BGC Compressed Fibre Cement sheeting must be fully supported on the line of joists, block / nogs. For tiled applications, sheet joints must be butted tight. In Wet Areas, where tiles bridge joints, the water-proof membrane must be fixed with a strip of 200mm wide fibreglass mesh.

**Interior Control Joints** are required when a continuous run of flooring exceeds 5.0m in any direction, at changes of direction or at openings such as doorways. Control joints must continue through the BGC Compressed Fibre Cement sheeting (and any tiling) and must be filled with a flexible sealant.

**Exterior Decking Control Joints** require a 5–10mm gap between sheets to allow for movement. Insert a 10mm backing rod into the gap and seal with a polyurethane flexible sealant.

On exterior decking, do not bridge sheet joints. With ceramic tiles, ensure tile joints and sheet joints correspond.



## Fasteners

**Timber Framing** – 10g x 50mm long, minimum of type 304 stainless steel, compressed sheet countersunk screws are required to fix BGC Compressed Fibre Cement sheeting.

**Lightweight Steel Framing** – Please refer to the separate BGC Steel Framing Technical Specification for information relating to fixing of BGC Fibre Cement products to lightweight steel framing.

Screw fixings can be driven 2-3mm below the sheet face. However, when tiling direct to BGC Compressed Fibre Cement sheeting, in non-wet areas, screw fixings should be driven flush.

Sheet fixing:

Joist Spacing (mm)	Maximum Fixing Centres (mm)
400	400
600	400

## Sheet Preparation

Screw holes should be pre-drilled prior to fixing the sheets to the framework. BGC recommend using a sharp Tungsten Carbide Countersink drill bit with a diameter 1mm greater than the screw diameter to allow sheet movement.

NB: Screws must not be located closer than 12mm from the sheet edge or closer than 50mm from the sheet corner.

## Sealing

After fixing, the screw holes should be sealed using a polyurethane sealant to prevent ingress of water into the framing. In Wet Areas, fixings must be driven maximum 2-3mm below the sheet surface and screw holes filled with a two-pot epoxy resin prior to the installation of the water-proof membrane.

Hint: Before drilling the holes, place a piece of masking tape over each hole location. Leave the tape in place until the hole is drilled, the screw fixed and sealant applied. Removing the tape immediately after sealing will leave the area clear of sealant and scuffmarks.

## Load Consideration

For requirements of floor structures, the NZBC refers to AS/NZS 1170: Structural design actions. AS/NZS 1170 specifies the loading conditions that the floor must be able to sustain. All dead and live loads that a floor is subjected to must be combined and factored in accordance with this standard.

### Concentrated Loads

Table 1 (as follows) shows BGC Compressed Fibre Cement sheets are suitable for these loads and should be used to determine the thickness of BGC Compressed Fibre Cement sheet required based on the application the floor is to be used for.

AS1170.1 distinguishes between residential and commercial flooring applications with point loads that each application must be designed to withstand.

Table 3.1 of AS1170.1 gives the minimum concentrated loads that must be sustained for each application. For residential and domestic applications the floor must sustain a 1.8kN (~180kg) load over an area of 350mm<sup>2</sup>. This is equal to a 21.1mm diameter round or 18.71mm square annulus. BGC Compressed Fibre Cement sheet can sustain this load.

For other residential and indoor commercial applications, AS1170.1 requires higher concentrated loads of: 2.7kN, 3.5kN and 4.5kN depending on the application of the floor. These concentrated loads must be exerted over an area of not more than 0.01m<sup>2</sup>, which is equivalent to a 100mm x 100mm applicator.

Table 1:

Thickness (mm)	Concentrated Load (kN)	Joist Spacing (mm)
15	2.5	300 - 600
18	4.1	
24	7.8	

### Uniformly Distributed Loads

Tables 2a and 2b (as follows) show the maximum allowable uniformly distributed load for BGC Compressed Fibre Cement sheet thickness and specified joist centres.

Table 2a: Span / Joist Spacing – Sheets Perpendicular to Joists (loads shown in kPa).

Thickness (mm)	Span / Joist Spacing (mm)						
	300	350	400	450	500	550	600
15	39.80	28.33	18.98	13.33*	9.72*	7.30*	5.62*
18	53.13	38.81	29.16	18.20*	11.94*	8.16*	5.76*
24	92.65	67.85	51.75	40.72	31.19	21.31*	15.04*

Table 2b: Span / Joist Spacing – Sheets Parallel to Joists (loads shown in kPa).

Thickness (mm)	Span / Joist Spacing (mm)						
	300	350	400	450	500	550	600
15	27.95	20.32	15.36	11.97	9.54	7.30*	5.62*
18	36.35	26.49	20.09	15.70	11.94*	8.16*	5.76*
24	68.32	49.97	38.07	29.90	24.06	19.74	15.04*

\* UDL as indicated is limited by deflection.

**Notes** - Applications requiring a point load capacity greater than 1.8kN will require trimmers to support all edges of each floor sheet. A deflection limit of span/200 has not been exceeded under serviceability load conditions. Loads specified in the tables are working loads and need to be factored in accordance with NZ/AS1170 to determine ultimate loads. Uniformly distributed loads specified include 1kPa to account for floor coverings and partitions etc. These values apply to the dry and fully saturated state. Orientation of the sheets length across joists is preferred; Parallel orientation requires all sheet edges to be supported in all instances.

## Warranty

BGC warrants Compressed Fibre Cement sheeting to be free from defects caused by defective manufacture or materials for a period of 15 years from the date of purchase. Furthermore, BGC warrants its products to be resistant from rotting, fire and cracking so long as the installation is carried out in accordance with BGC literature available at the time of purchase.

This warranty is subject to conditions as set out in a separate document. For a copy of this information and/or a copy of the quality control measures, please contact BGC Fibre Cement (NZ).



