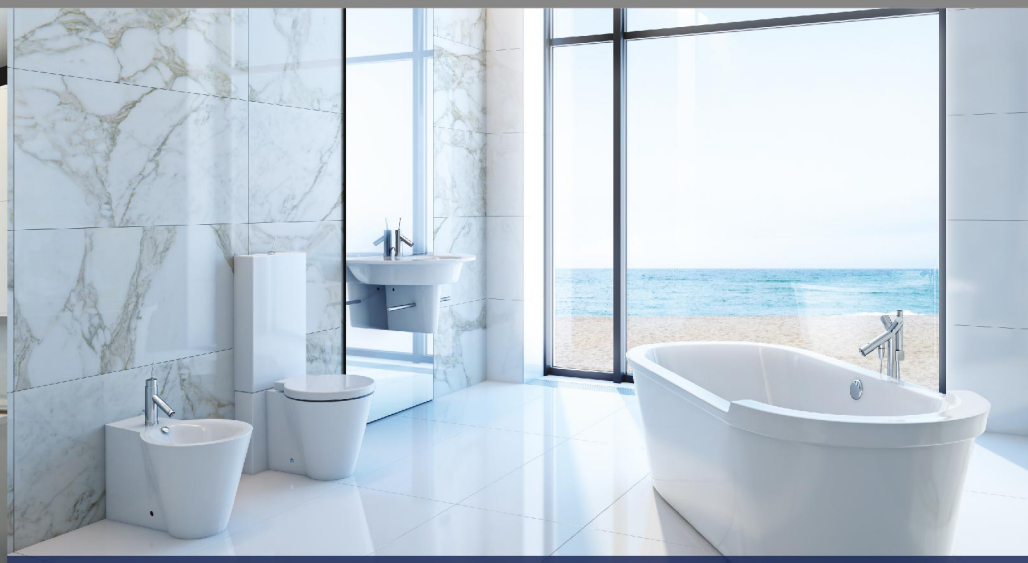
PRIMA™
FIBRE CEMENT BUILDING SOLUTIONS

Technical Manual



International

PRIMA *aqua*

Hume Cemboard Industries
A Member of the Hong Leong Group

Introduction

The continuous quest for improvement and better value for money is one that has intensified over time. With PRIMA*aqua*, you can have both, providing you with superior durability as well as high performance that has become a prerequisite in today's quality-conscious society.

PRIMA*aqua* is an autoclaved cellulose fibre cement sheet, with a special formulation for the needs of internal dry and wet area applications.

PRIMA*aqua* has a smooth sanded, sealed surface and is suitable for tiling.

PRIMA*aqua* has square rebated edges on both sides of its length for a neat flush joint.

Contents

Product Specifications Overview

Product Description

PRIMA*aqua* sheets are manufactured to nominal 6.0mm and 9.0mm thickness and are suitable for use as internal wall and ceiling linings, soffit linings as well as wet area applications where sheets are subjected to severe or intermittent wetting.

PRIMA*aqua* sheets are manufactured with a sanded and sealed surface, and its long edges are square rebated, for seamless, and flush set joint.

PRIMA*aqua* has a typical moisture movement of 0.06% - from Equilibrium Moisture Content to saturation. This feature allows the sheets to be flush set, without fear of cracks.

Basic Composition

Basic ingredients of the products are Portland cement, finely ground sand, quality pulp from NZ and water.

Moisture Content

Moisture content at EMC is approximately 7% and at saturation is 33%.

Note: Where values are stated at EMC, the ambient temperature is 27°C ± 2°C and relative humidity is between 65% - 95%

Building Code Compliance

The requirement set out in the Building Code and local Building Regulatory Authority must be checked and verified prior to the commencement of work to ensure their compliance.

Fire Performance

PRIMA*aqua* have been tested by CSIRO Australia to AS 1530.3 and have achieved the following indices.

Early Fire Hazard Indices	
Ignition Index	0
Spread of Flame Index	0
Heat Evolved Index	0
Smoke Developed Index	0-1

PRIMA*aqua* has been tested by CSIRO to AS/NZS 3837 and is classified as a Group 1 material in accordance with specification A2.4 and C1.1 Oa of the Building Code of Australia (BCA).

PRIMA*aqua* is non-combustible based on test by CSIRO according to AS 1530 Part 1 "Combustibility Test For Materials" Standard.

PRIMA*aqua*, is deemed incombustible in accordance with BCA.

Appraisals

The PRIMA*aqua* cellulose-cement flat sheets as manufactured by **HUME CEMBOARD INDUSTRIES SDN BHD** are suitable for use as internal and external ceiling linings, eave linings and internal wall linings in dry or wet areas that are not subjected to direct sunlight, rain or snow when the conditions listed in CSIRO Technical Assessment 244 are fulfilled.

OPUS International Consultant, New Zealand has determined the compliance of PRIMA*aqua* to AS/NZS 2908.2-Cellulose-Cement Products. Part 2: Flat Sheets.

Serviceability Life

The performance of PRIMA products is limited only by the durability of the supporting structure and the materials used in the installation. When installed and maintained as per good building practice and specifications described in this manual, PRIMA products are expected to have a minimum serviceability life of 50 years*.

**Appraised by BRANZ based on New Zealand Building Code*

Internal Product Range

Standard Sizes and Mass

PRIMA*aqua* Wall and Ceiling Linings (Flush Finish Board)			
Appearance	Smooth sanded surface. Square Rebate at 2 long edges.		
Mass at EMC	• 6.0mm sheets- 8.5kg/m^2 • 9.0mm sheets- 12.5kg/m^2		
Density at EMC	• Density at EMC is 1390kg/m^3		
Product Code	**Length (mm)**	**Width (mm)**	**Thickness (mm)**
PVL12001800	1800	1200	6
PVL9002400	2400	900	6
PVL12002400	2400	1200	6
PVL13502400	2400	1350	6
PVL12002700	2700	1200	6
PVL9003000	3000	900	6
PVL12003000	3000	1200	6
PVL13503000	3000	1350	6
PVL12003600	3600	1200	6
PVL13503600	3600	1350	6
PVL12004200	4200	1200	6
PVL13504200	4200	1350	6

Note:
1. Other sizes may be available upon special order and may be subject to special conditions.
2. The mass per unit area given should NOT be used for calculatmg the weight for transportation purposes. For packing details, contact our office or our nearest agent in your area.

PRIMA*aqua* Installation Instructions

Installation Instructions

Sheet Thickness Selection

The selection of sheet thickness should be based on the following criteria: -

- For general residential construction and ceiling applications - 6.0mm PRIMA*aqua*.
- For construction where high impact resistance may be desirable, e.g: Hotels, Schools, Hospitals and Shopping Centres - 9.0mm PRIMA*aqua*.

Framing Specification

PRIMA*aqua* can be applied to timber or steel framing. Framing timber must comply with AS 1684 - Residential Timber-Framed Construction. To minimize shrinkage, it is preferable to use kiln-dried framing timber.

Steel frame must comply with AS3623; Domestic metal framing. Steel framing must be fabricated from light gauge steel of a minimum 0.55mm to 1.60mm base metal thickness. Use only cold-formed steel sections. The use of hot rolled sections is not recommended due to the excessive thermal differential movement.

Stud face width must be at least 38mm.

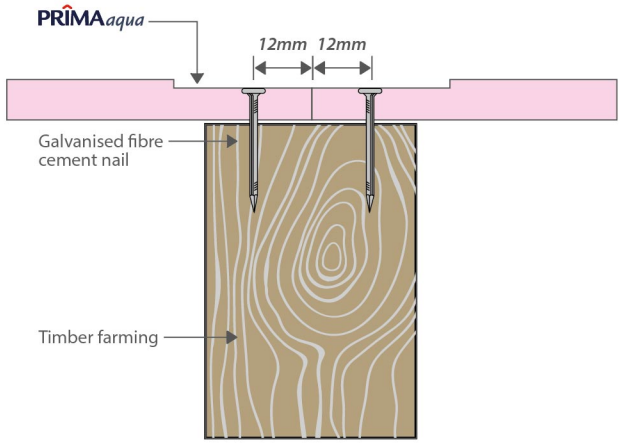


Figure 1: Fixing Timber Support

PRIMAaqua Installation Instructions

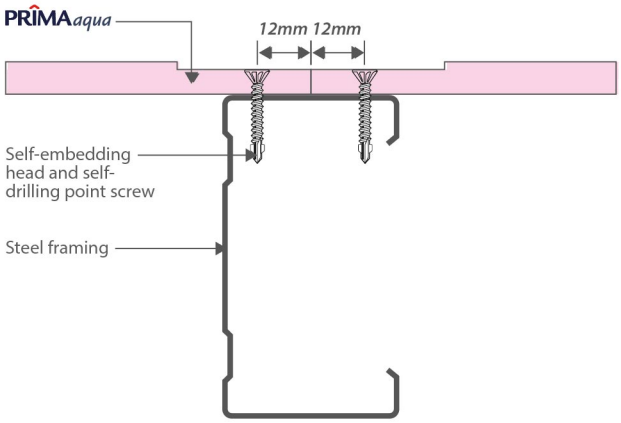


Figure 2: Fixing to Steel Support

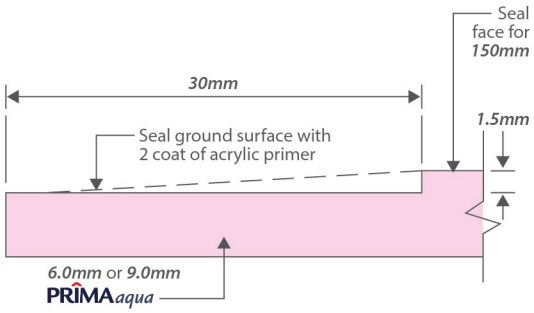


Figure 3: Square Rebated Edge

Fasteners

Fixing to Timber	Fixing to Steel Frame 0.55mm to 0.75mm Base Metal Thickness	Fixing to Steel Frame 0.75mm to 1.6mm Base Metal Thickness
Galvanised Fibre Cement Nails	Self-embedding Head, Self-drilling Screws	Self-embedding Head, Self-drilling "Wing Teks" Screws
		
• 2.8mm ø x 30mm for fixing 6.0mm PRIMAaqua • 2.8mm ø x 40mm for fixing 9.0mm PRIMAaqua	• 8 gauge - 18 x 20mm for fixing 6.0mm PRIMAaqua • 8 gauge -18 x 30mm for fixing 9.0mm PRIMAaqua	• 8 gauge - 18 x 20mm for fixing 6.0mm PRIMAaqua • 8 gauge - 18 x 30mm for fixing 9.0mm PRIMAaqua

Note:
1. Screw heads must be embedded 0.5mm below sheet surface.
2. Drive nail heads flush with board surface.
3. Screws must have adequate corrosion resistance coating.
4. All nails shall comply with AS 2334 : Steel nails Metric Series or equivalent standards.
5. All screws shall comply with AS 3566 - Self-drilling Screws - for the building and construction industries or equivalent standard.
6. Fastener fixing points may be patched with joint compound and then sanded with 120 grit sandpaper upon drying.

On-site Sheet Edge Rebating

Best result on PRIMAaqua joint can be obtained with square rebated edges. At times it may become necessary to form a rebated edge on a building site. This can be achieved using an electric grinder equipped with an appropriate carborundum blade. Ensure the ground edge retains at least 4.5mm thickness for 6.0mm sheet and 7.5mm for 9.0mm sheet.

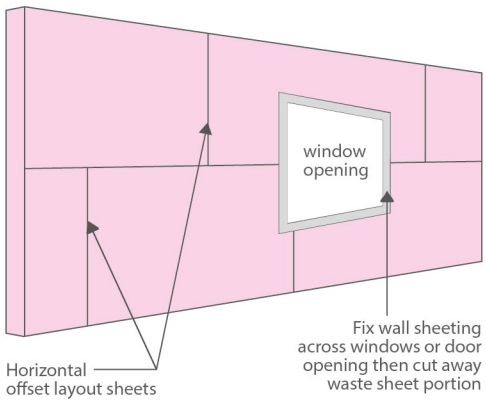


Figure 4: Sheet Layout at Openings

PRIMAaqua Wall Lining

Sheet Orientation

PRIMAaqua sheets may be installed vertically or horizontally. Generally, sheets are placed to minimize the number of joints. Horizontal sheeting is more convenient for residential construction. When fixing horizontally, sheets must be laid in staggered or brick pattern. Sheet joints must not coincide with sides of openings. Refer to Figure 4.

Framing Construction

Framing must be constructed with studs at maximum 600mm centres with continuous top and bottom plates. Framing stability must not be dependent on lining material. Where necessary, provide noggings for framing stability.

Nail / Screw Fixing

Fixings are to be installed at 200mm maximum centres to all sheet edges and all intermediate framing members. Fixings are to be a minimum of 12mm from sheet edges and 50mm from corners of sheet. Commence fixing each sheet from centre working outward to ensure sheeting is installed firmly against the framing. Do not fix sheets to top and bottom plates and noggings, unless wall is to be tiled.

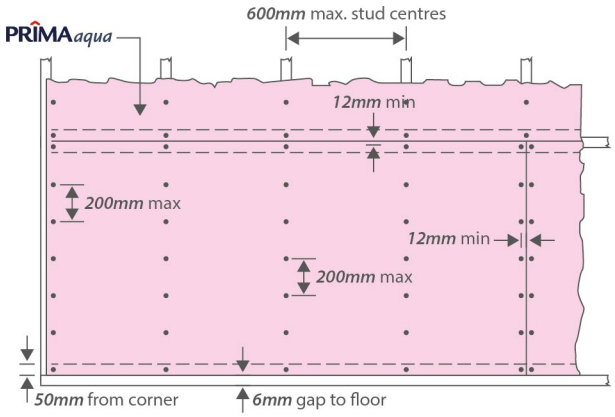


Figure 5: Horizontal Sheet Fixing (Untiled Wall)

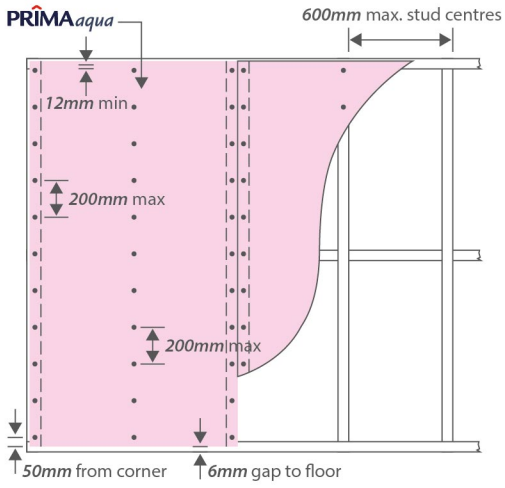


Figure 6: Vertical Sheet Fixing (Untiled Wall)

Adhesive and Fastener Fixing Method (Untiled Walls)

This fixing method is only suitable for untiled wall applications. Install PRIMAaqua as follows :-

1. Ensure framing surface and the reverse side of PRIMAaqua is free from any dust or other contaminants.
2. Apply approximately 25mm diameter x 15mm thick daubs of wallboard adhesive at intermediate framing member surface at 250mm centres maximum.
3. Nail or screw the sheet ends at 200mm centres and ensure sheet's long edges are fixed to each framing member.
4. Fastener fixing point must not coincide with daubs of adhesive.
5. Provide temporary blocks at sheet centre and allow adhesive to cure prior to removing the temporary blocks. (Not required for ceiling application).

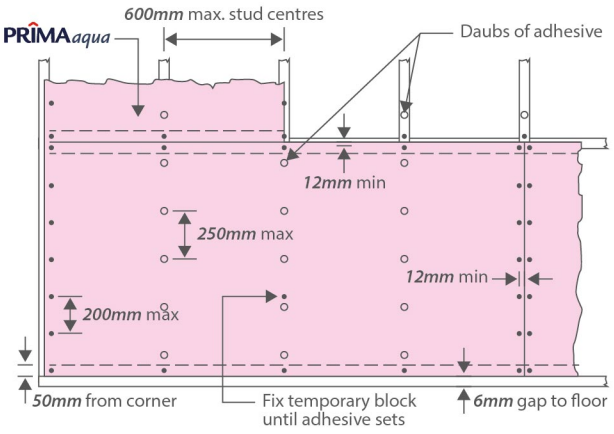


Figure 7: Adhesive and Fastener Fixing (Untiled Wall)

PRIMAaqua Ceiling and Soffit

Framing Construction and Sheet Layout

Ceiling joists or battens must be spaced not exceeding 600mm centres. Provide intermediate framing where necessary. Intermediate framing does not necessarily coincide with sheet edges.

PRIMAaqua sheets must be laid with the long dimension at right angles to the supporting structure, in a staggered or brick pattern.

Sheet Fixing

Nail or screw PRIMAaqua as depicted in Figure 8. When using wall adhesive in conjunction with nails and screws, apply about 25mm diameter x 15mm thick daubs of adhesive at 250mm centres as shown in Figure 9. Use double nailing at sheet centre when fixing PRIMAaqua as ceiling lining.

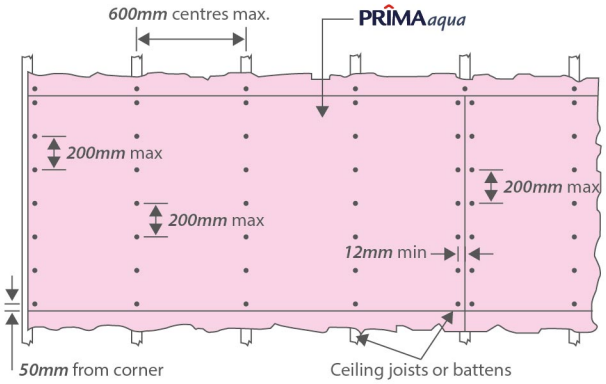


Figure 8: PRIMAaqua Ceiling - Nail or Screw Fixed

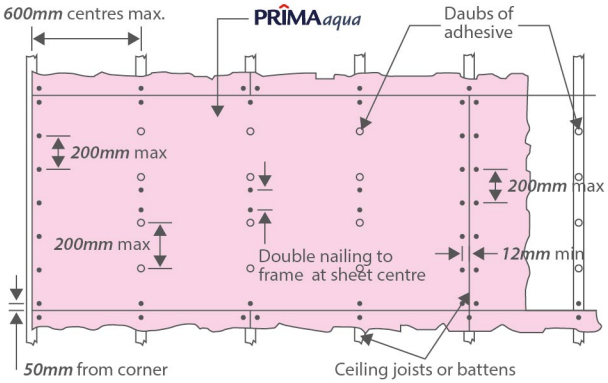


Figure 9: PRIMAaqua Ceiling - Fastener and Adhesive Fixed

Joints and Corners (Untiled Walls and Ceilings)

Flush Jointing

PRIMA*aqua* sheets may be loosely butt jointed. Gap between sheets should not exceed 3mm. Sheet joints must occur at the centre line of supports.

PRIMA*aqua* joints may be flush set with proprietary plaster compounds. The jointing method is as follows:-

1. Ensure that the sheet joint is free from dust, grease and / or any contaminants.
2. Prepare the joint compound as per the manufacturer's recommendation.
3. Apply the first layer of joint compound onto the sheet joint to cover the joint recess and embed the perforated paper jointing tape into the bedding material. Cover the tape with a thin layer of the joint compound and allow it to dry.
4. Apply the second coat of joint compound, spreading to approximately 200mm wide and allow to dry.
5. Apply the third coat of joint compound, feathering out to approximately 270mm wide.
6. When topping compound is completely dry, sand off with 120 grit sandpaper prior to applying finishes.

Notes:
1. Ensure that the perforated paper jointing tape is thoroughly embedded to eliminate any air bubbles being trapped between the tape and the jointing compounds.
*2. Most Plasterboard Jointing and Topping Compounds are compatible with, and suitable for flush jointing PRIMA*aqua*.*

Movement Joints

At the movement joint, wall or ceiling construction must have total separation of the framing and lining sheets. A minimum of a 5mm gap must be provided. If an expansion joint kit is used, a minimum gap of 15mm is required. Tiles or any nonflexible finishes must not bridge over movement joint. Refer to Figure 11 and Figure 27.

Movement joint must be provided as follows:-
- 7.2m centres for untiled walls and ceiling
- 4.8m centres for tiled walls

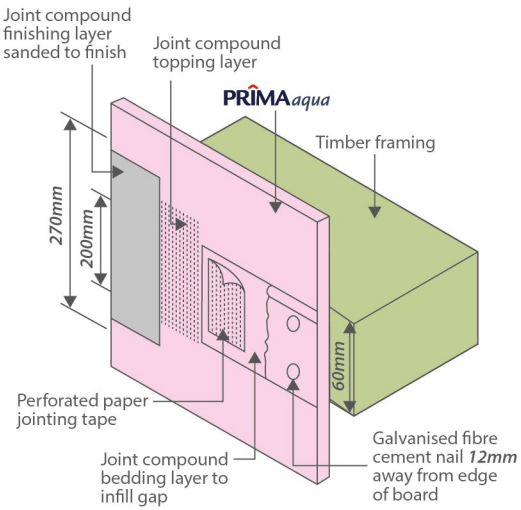


Figure 10: Flush Joint Detail (Untiled Wall and Ceiling)

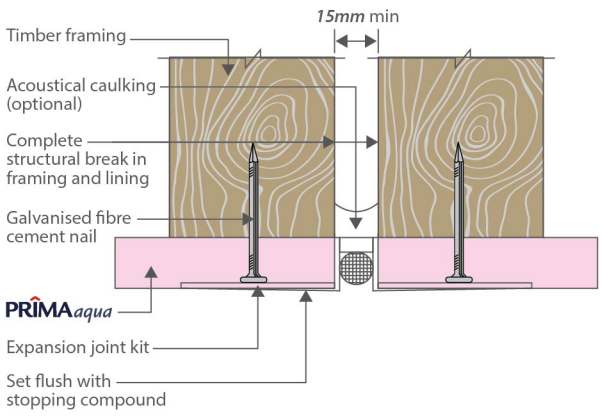


Figure 11: Movement Joint Detail (Untiled Wall and Ceiling)

Internal Corner

Apply bedding compound to both faces of the internal corners to a width of approximately 60mm from the corner. Fold the perforated paper tape to form a 90 degree angle, embed the tape into the compound and cover the tape with a thin layer of compound. Allow the compound to dry thoroughly. Apply the second coat of bedding compound and allow to dry thoroughly. Apply a coat of topping compound feathering out approximately 200mm from the internal corner. Allow to dry thoroughly and sand with 120 grit sandpaper. Refer to Figure 12.

External Corners

PRÎMA*aqua* external corners may be finished with proprietary external corner beads. For wet area applications, use only PVC corner angles. Trowel a layer of joint compound onto the external corner beads to a width of 150mm and allow it to dry. Spread the second coat to 250mm from the corner. Upon drying of the second coat, spread the final coat of the topping compound to approximately 300mm from the edge. Refer to Figure 13.

Note: Finishing coat of joint compound must be sanded with 120 grit sandpaper prior to application of paint or wall covering.

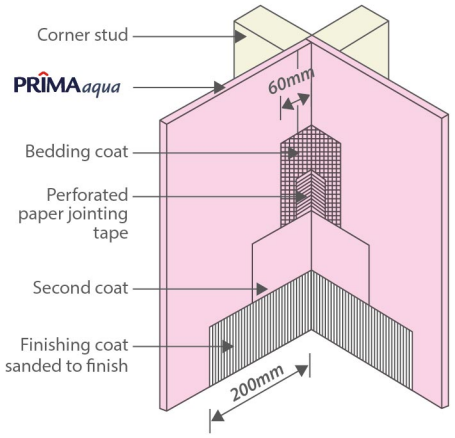


Figure 12: Internal Corner Detail

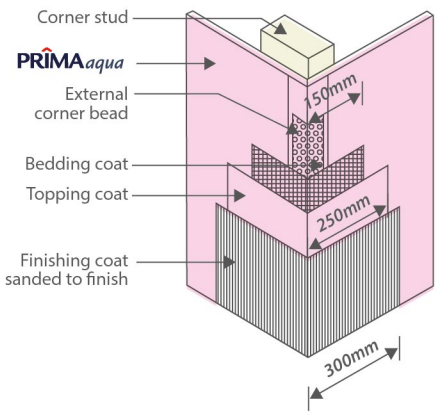


Figure 13: External Corner Detail

Intersections

Wall to Ceiling and Floor

The intersection between **PRIMA***aqua* wall and ceiling may be finished with plaster cornice, timber moulding or PVC angle. **PRIMA***aqua* wall to floor intersection may be finished with suitable skirting. Refer to Figure 14

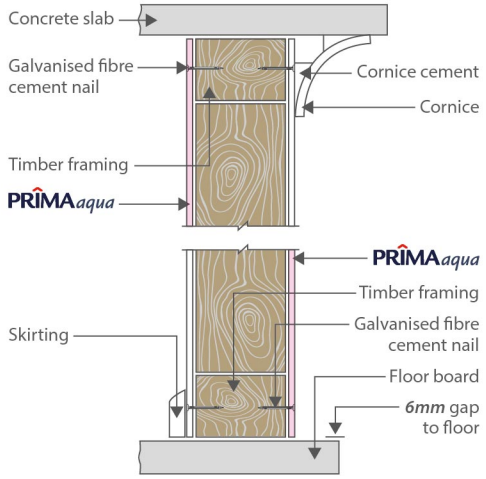


Figure 14: Junction of Wall to Ceiling & Floor

Will Abutment (Masonry Wall)

Where **PRIMA***aqua* walls intersect with masonry walls, a flashing material should be installed to isolate stud wall from moisture migration through masonry. Refer to Figure 15.

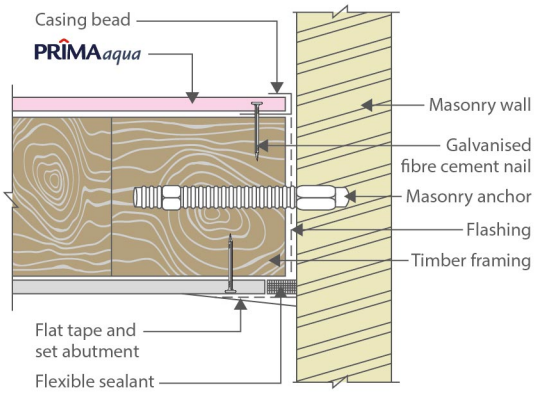


Figure 15: Detail at Masonry Wall Abutment

Wet Area Waterproofing Systems

Wet area waterproofing should comply with Australian Standard, AS 3740: Waterproofing of wet areas within residential buildings, or equivalent. Construction must be in accordance with good building practices and fulfill the local building regulations.

General Wet Area

Provide perimeter flashing at floor-to-wall intersections in all general wet areas such as kitchen, laundries and bathroom, other than shower. Flashing must extend a minimum of 40mm from finished floor level. Alternatives of perimeter flashing are shown in Figure 16 to Figure 18.

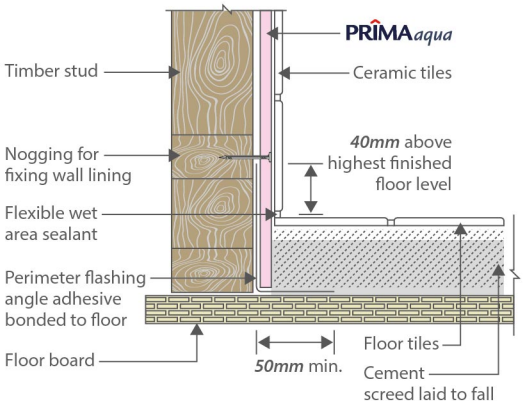


Figure 17: Angle Perimeter Flashing

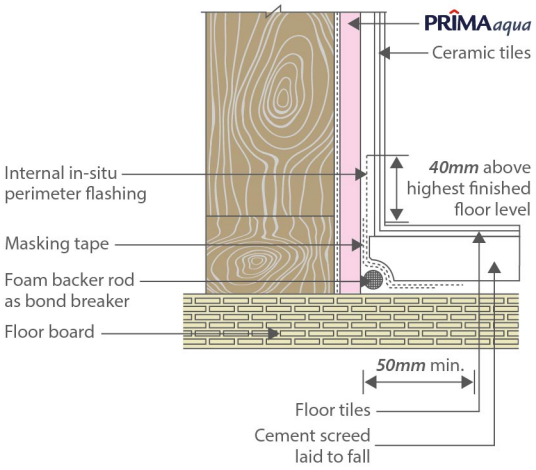


Figure 16: Cast In-situ Perimeter Flashing

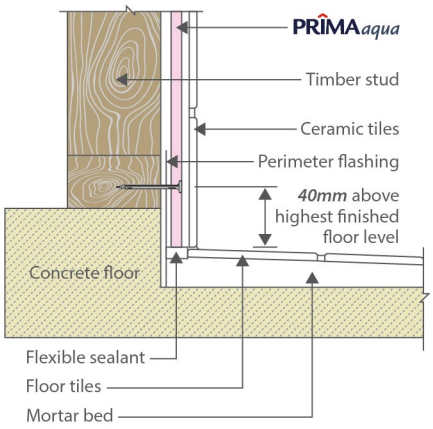


Figure 18: Flashing at Concrete Floor Slab

In-situ Internal Shower Tray

Cast In-situ Internal Membrane System must be constructed as follows: Refer to Figure 19 and Figure 20.

1. Floor must be completed prior to installation of wall lining.
2 Provide galvanized mild steel angles with minimum leg of 40mm at corner studs.
3. Fix PRÎMA*aqua* as per fixing instructions.
4. Seal the gap between PRÎMA*aqua* edges and the floor with compatible flexible acrylic sealant or its equivalent.
5. Construct a bond breaker at wall-to-floor intersections. This can be done by adhering 13mm diameter backer rod to the intersection corner by means of self-adhesive paper tape.
6. Apply the waterproofing membrane to the floor and PRÎMA*aqua* wall. Waterproofing on PRÎMA*aqua* must extend a minimum of 150mm above the finished bathroom floor level or 25mm above the highest possible water level. Refer to Figure 19 and 20. In all cases, refer to membrane manufacturer for details.
7. Extend waterproofing membrane to form angle flashing (min.75mm legs) along the vertical corner. Flashing must also be applied at all sheet joints.
8. Lay the cement screed to the required gradient.
9. Fix tiles as specified in the '**WALL TILING PROCEDURE**' section on page 14.

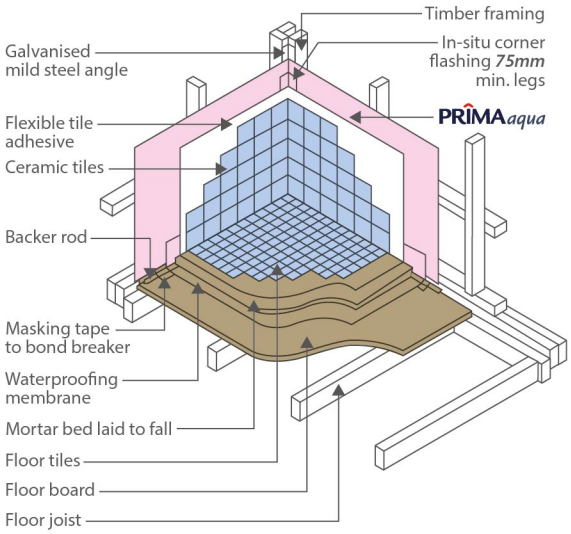


Figure 19: Cast In-situ Internal Membrane

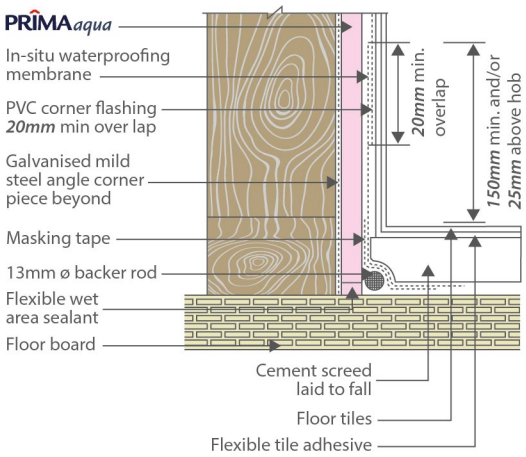


Figure 20: Detail of Cross-section at Wall-to-Floor

Pre-formed Shower Tray

The shower tray installation may be as per Figure 21. Provide 6mm gap between the sheet and shower tray. Seal gap with waterproof flexible acrylic gap sealant or silicon sealant.

Detail at Pipe Penetration

Provide a 6mm clearance around pipe penetrations. Seal gap with acrylic gap sealant and silicone sealant. Refer to Figure 22.

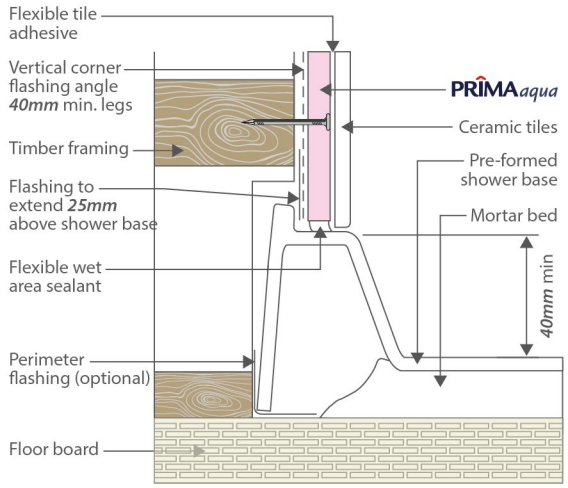


Figure 21: Shower Recess Detail

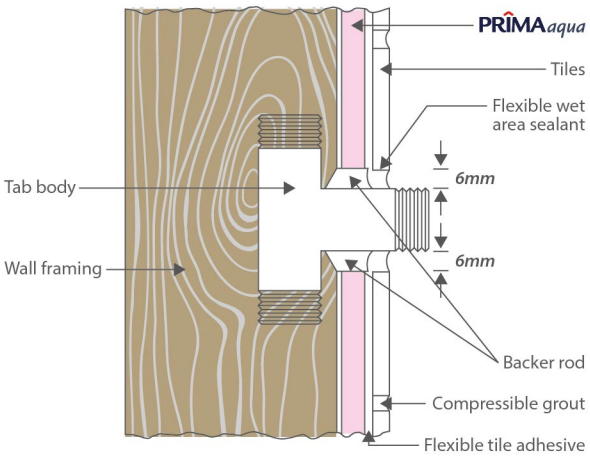


Figure 22: Pipe Penetration Detail

Tiling to PRIMA*aqua* Wall

PRIMA*aqua* wall lining is an excellent substrate for tiling. Flexible tile adhesive must comply with AS 2358 - Adhesive For Fixing Ceramic Wall Tiles. Sheets to be tiled must not be fixed using wallboard adhesive.

For general purpose application of ceramic tiles up to 6.0mm thickness, framing must be constructed with studs at 600mm maximum centres and noggings at 1200mm maximum centres. PRIMA*aqua* sheet must be fixed to studs, noggings, top and bottom plates. Refer to Figure 23.

To cater for increased loadings in heavy duty installations and where tiles exceed 6.0mm in thickness, studs must be spaced at 400mm maximum centres and noggings at 600mm maximum centres.

Installation of tiles with a mass of 20kg/m2 or more may require specific detailing for the provision of adequate structural support. Generally the bottom edge of tiles must be supported by a metal angle which has been fixed to the bottom plate prior to commencement of tiling. For heavy tile installations, 9.0mm thick PRIMA*aqua* must be installed as a substrate.

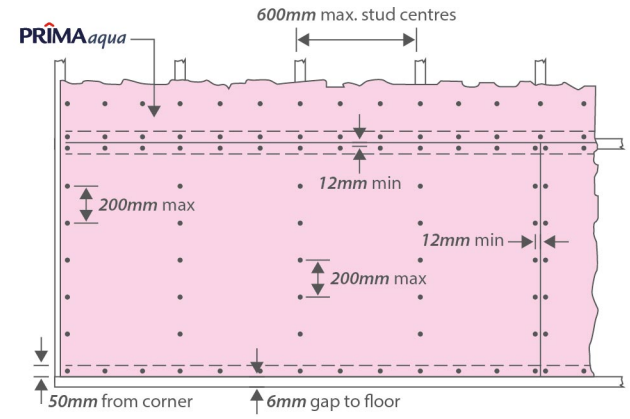
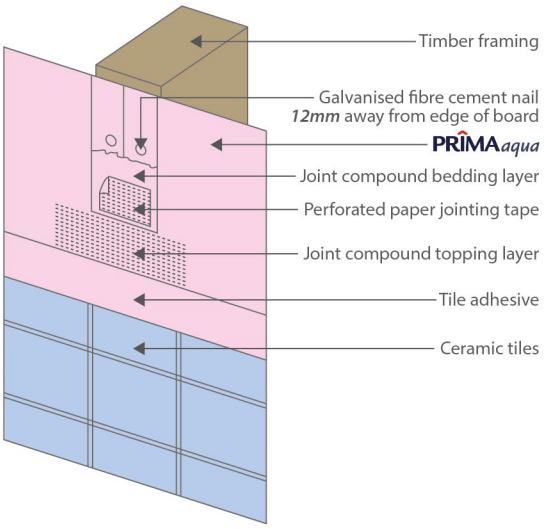


Figure 23: Horizontal Sheeting (Tiled Wall)

Wall Tiling Procedure

1. Ensure that the board is free from dust or grease. Wipe board surface with damp cloth if necessary.
2. Mark the height of the proposed tiled wall.
3. Estimate the number of tile courses required.
4. Indicate the bottom edge of the first course of full-sized tiles.
5. Apply flexible tiling adhesive to the board surface with a notched trowel. Spread the adhesive not more than 1m^2 at a time. Refer to the adhesive manufacturer's recommendations.
6. Fix tiles to PRIMA*aqua* with an allowance of approximately 2mm gap between each tile. Use tile spacer to achieve consistent gap at tile joint.
7. Apply adequate pressure to the tile to ensure that the back face of the tile is covered with the tiling adhesive.
8. The bottom course is normally fixed last.



Tiled Joint

Sheet joint to be tiled must not be finished with topcoat joint compound. Refer to Figure 24.

Figure 24: Tiled Joint Detail

Tiled Vertical Corners

Where internal and external vertical corners are to be tiled, seal junctions of sheets with flexible wet area sealant. Use mould-resistant silicone to seal tile corner joints (colour matched with tile or grout). Refer to Figure 25 and Figure 26.

Tiled Movement Joint

When tiled walls exceed 4200mm in their dimensions (i.e. length or height), a movement joint must be provided. Tiles must not bridge over a movement joint and construction must be detailed as shown in Figure 27.

Painting and Wall Covering

The smooth surface of PRIMA*aqua* is ideal for quality acrylic-based paint. Generally, a minimum of two coats is required. Coating should be of a vapour permeable type. Other types of coating such as polyurethane or epoxy paints are also suitable. In all cases, coating manufacturer's recommendations should be adhered to. PRIMA*aqua* will also accept decorative wall coverings without any special surface preparation. Alternatively, PRIMA*aqua* wall linings may be finished with ceramic, marble or granite tiles. Refer specific section on PRIMA*aqua* tiling procedure.

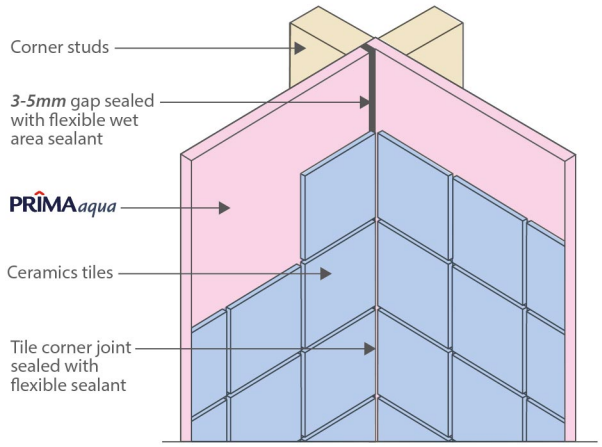


Figure 25: Tiled Internal Corner

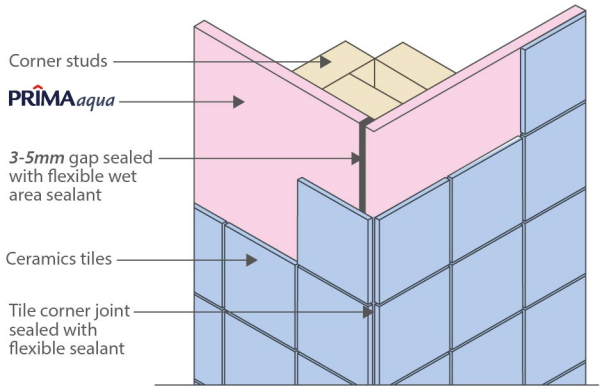


Figure 26: Tiled External Corner

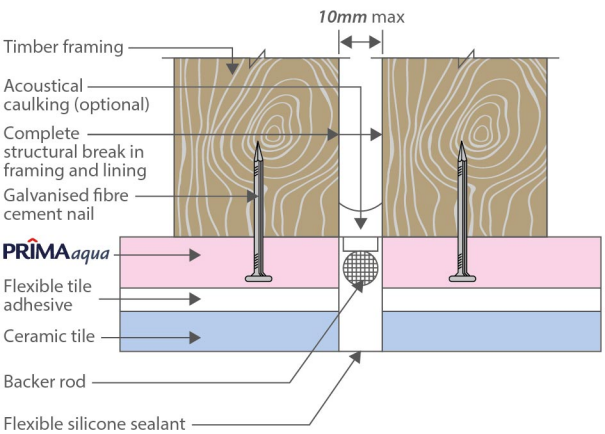


Figure 27: Tiled Expansion Joint

Working Instructions

Delivery, Handling And Storage

- To minimize the possibility of on-site damage, sheets should be delivered just prior to installation.
- Always lift sheets vertically, (on-edge) lengthwise.
- Store sheets neatly on a flat surface supported evenly with bearers spaced at 600mm centres maximum, clear of the ground to avoid damage and moisture ingress.
- Store under cover and ensure sheets are dry prior to fixing. Never install damp sheets. Damp sheets must be allowed to dry to equilibrium moisture content (EMC) before fixing.
- Protect edges and corners from damage on site.

Note - Floor loadings should be considered when stacking sheets.

Working Instructions

Cutting Methods

A dust mask and safety glasses should always be worn when cutting, drilling or grinding. Dry cutting with power tools should be performed in a well-ventilated area or open-air situation using a power-saw fitted with dust-extracting attachments.

A circular saw with dust collecting facilities should have carbide-tipped teeth or a carborundum blade.

Scoring and Snapping

Any scribing tool or special tungsten-tipped scoring knife can be used for this method of cutting, refer to Figure 28.

- Score the face of the PRIMA board, repeating the action to obtain a depth of about 1/3 of sheet thickness.
- Snap the off-cut upward to achieve cut. If the edge is rough, trim with a rasp.

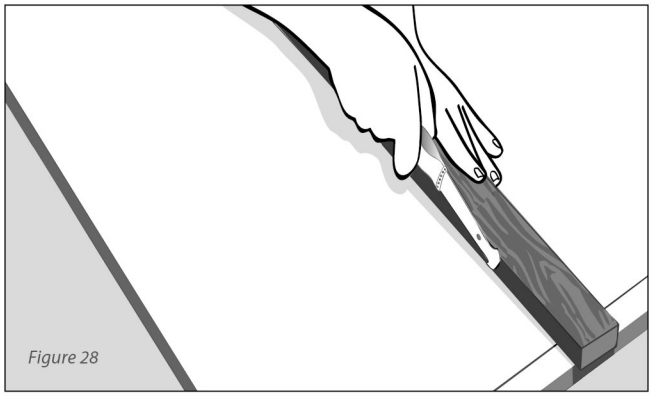


Figure 28

Hand Guillotine

When using a hand guillotine, best results are obtained when the board and the off-cut are both fully supported, refer to Figure 29.

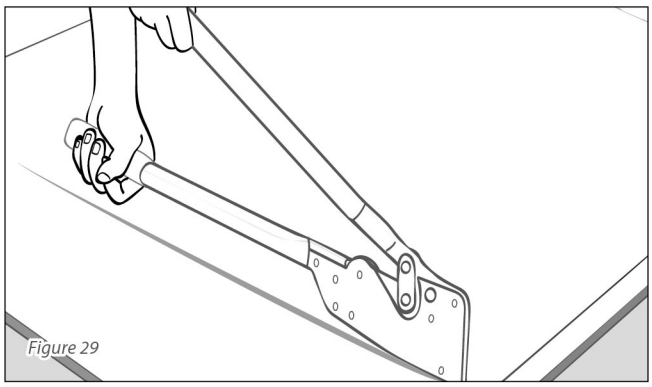


Figure 29

Notching

Use hand saw to cut the sides of the notch. Score along the back of the notch with scoring knife and snap the waste piece upwards, refer to Figure 30.

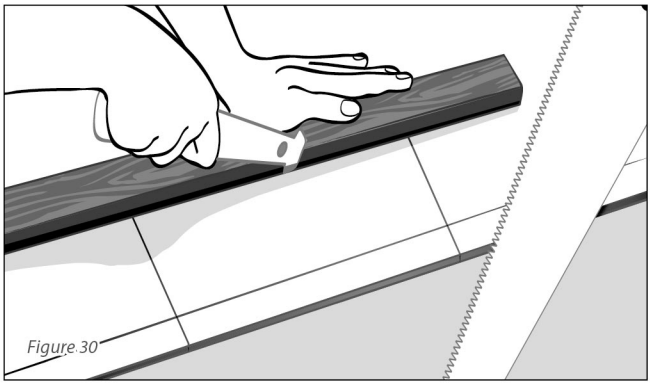


Figure 30

Working Instructions

Penetrations

Round holes may be cut using a power drill with a tungsten tipped hole saw attachment. Alternatively rectangular or circular holes may be formed by using a masonry drill to make a series of smaller holes around the perimeter of the proposed opening, and then tapping out the waste section carefully, refer to Figure 31.

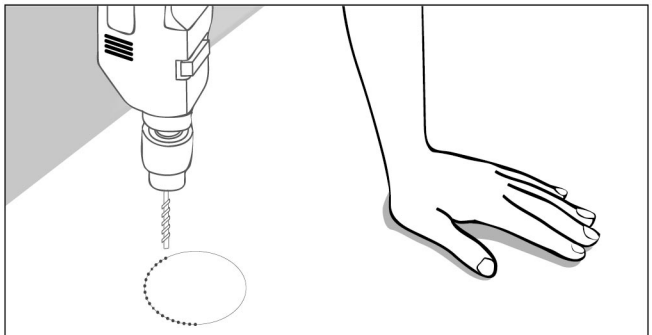


Figure 31

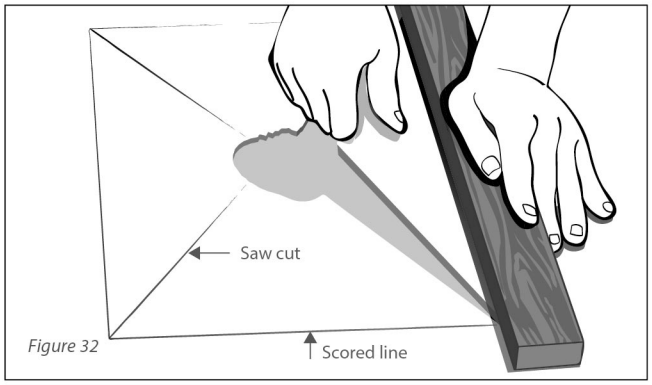


Figure 32

Larger rectangular holes and openings can be made using the following procedure, refer to Figure 32.

- Score the perimeter of the hole using a scoring knife.
- Drill a larger circular hole at the centre of the proposed opening.
- Use a saw to cut from the centre to the corners of the proposed opening.
- Hold a straight edge or a piece of wood along the scored line and snap the waste piece upwards.

Maintenance

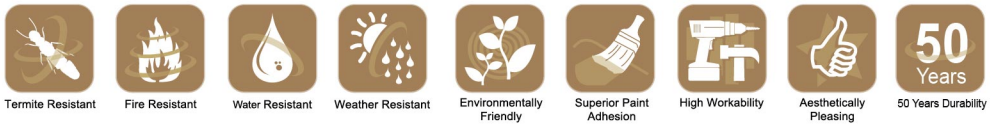
Periodic maintenance of the coating and finishes must be performed as specified by the manufacturer. The jointing systems should also be inspected periodically during the life of the building. All joints and sealant must be checked for cracks to prevent the intrusion of water. Make good any defects in accordance with the systems outlined in this manual and good building practices.

Notching

Use hand saw to cut the sides of the notch. Score along the back of the notch with scoring knife and snap the waste piece upwards, refer to Figure 11.

Warning

Breathing dust from silica based products such as fibre cement can be hazardous over an extended period of time. Always use a mask, protective equipment and clothing that complies with the latest regulations of Occupational Safety and Healthy (OSH) or Workplace Health and Safety.



WARRANTY

Hume Cemboard Industries Sdn Bhd ("the Company") warrants that it will at all times ensure that the products referred to herein ("the Products") shall be supplied by it to the purchaser free of any manufacturing defects and defective materials used in their manufacture.

In the event and if contrary to this assertion the Products prove to be defective, whether as a result of manufacturing defects or arising from the Company's use of defective materials, the Company will supply replacement Products. The Company shall, however, have the option and may choose to reimburse the purchaser the purchase price of the Products instead. The Company shall not be liable for any economic or consequential losses arising from any use of defective Products.

This warranty shall be void unless the purchaser has, in its handling and installation of the Products, complied with the recommendations contained in this brochure and other good building practices expected of a reasonable purchaser.

ADVISORY NOTE

Successful installations of Hume Cemboard Industries Sdn Bhd's Products depend on a large number of factors that are outside of the scope of this brochure. Particular design, detail, construction requirements and workmanship are beyond the control of the Company. As such, Hume Cemboard Industries Sdn Bhd's warranty does not extend to non-usability of Products or damage to Products arising from poor or defective designs or systems or poor quality of workmanship in the installation of Products.

For more information, please contact us at:

Hume Cemboard Industries

A Member of the Hong Leong Group

No. 12 Jalan Tandang, 46050 Petaling Jaya, Selangor, Malaysia.

Tel: +603 7781 1977, +603 7625 9999, + 603 7625 3880
Fax: +603 7625 7822, +603 7625 3990
Email: sales@humecemboard.com.my

www.primafibrecement.com

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