



Wet Area Systems

Specification and installation manual

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
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NATIONAL SUPPORT

VISIT: Winstone Wallboards Limited
37 Felix Street, Penrose,
Auckland 1061, New Zealand

POST: PO Box 12 256, Penrose,
Auckland 1642, New Zealand

PHONE: +64 9 633 0100

EMAIL: info@gib.co.nz

WEB: gib.co.nz

GIB® HELPLINE

0800 100 442

RESIDENTIAL AND NON-RESIDENTIAL APPLICATIONS. BATHROOMS, LAUNDRIES, TOILETS AND KITCHENS.

Protection from internal moisture is an important consideration when designing interior lining systems for homes, multi-unit apartments, educational, healthcare and commercial applications.

The New Zealand Building Code sets out minimum standards for wet area spaces in residential dwellings. However, often higher levels of performance and protection from internal moisture is demanded.

The GIB® Wet Areas System specification and installation manual provides internal lining options and details for specifiers, builders and building owners.

USE ONLY THE CURRENT SPECIFICATION

This manual supersedes the publication GIB Aqualine® Wet Area Systems March 2007. Winstone Wallboards Ltd accepts no liability for reliance upon publications that have been superseded.

If you are unsure whether this is the current publication, call the GIB® Helpline on 0800 100 442 or go to gib.co.nz

BEWARE OF SUBSTITUTION

The performance of GIB® Wet Area Systems requires accurate design detailing and construction practices. All GIB® Systems have been developed specifically for New Zealand conditions and independently tested, assessed or appraised, to ensure the required level of performance. It is important to use GIB® components where specified and to closely follow the specified design details and construction practices, to be confident that the required level of performance and quality is achieved on site.

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This publication

This publication is a best practice guide to the design and construction of wall and ceiling linings in wet areas with intermittent water exposure within residential and non-residential buildings, as covered by NZ Building Code Clause E3 Internal Moisture.

The information is designed to be helpful to designers, contractors and home-owners wishing to achieve a result that is easy to incorporate into modern design, simple and clear to construct, and that will satisfy the needs, requirements and expectations of both the NZ Building Code and the end user.

Wet areas in the home often require relatively frequent and expensive renovation or repair, often because of the ingress of water to the structure of the building.

To form a complete wet area system it is important to specify compatible materials and systems, designed to cope with conditions that are common in wet areas, and to ensure correct installation using best practice.

WET AREAS

Generally, wet areas are described as spaces to where fresh water is reticulated, such as bathrooms, toilets, laundries and kitchens. Within wet areas the following requirements apply;

1. NZBC Clause E3.3.4 states that wall surfaces adjacent to sanitary fixtures or sanitary appliances must be impervious and easily cleaned.
2. NZBC Clause E3.3.6 states that surfaces of building elements likely to be splashed must be constructed in a way that prevents water splash from penetrating behind linings or into concealed spaces.

NZ Building Code Clause E3 also refers to other requirements not covered in this publication, such as ventilation, condensation control and overflow management. Ongoing maintenance of wet areas is also important to maximise service life.

GIB AQUALINE®, GIB TOUGHLINE® AQUA AND GIB WEATHERLINE®

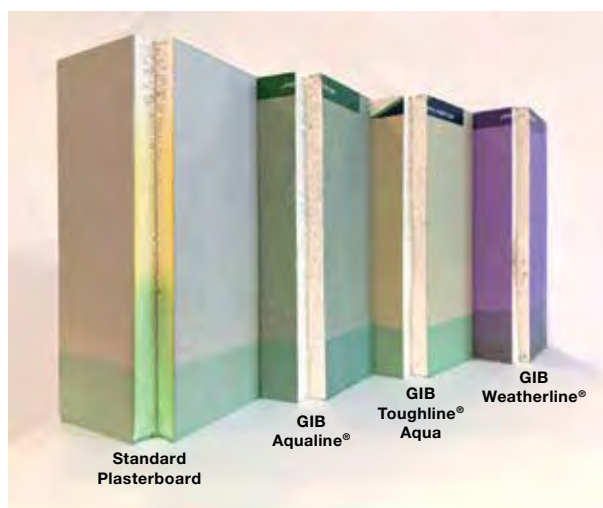
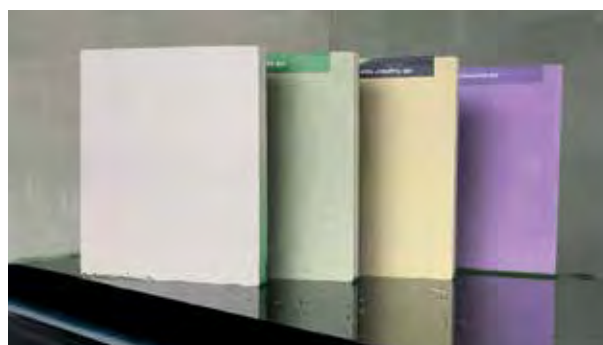
Although able to cope with infrequent short-term exposure, standard gypsum plasterboard will have a shortened life expectancy when frequently exposed to water or a high moisture environment.

The NZ Building Code does not call for water resistant linings in wet areas but it is desirable to specify lining materials which will maintain their integrity longer when exposed more frequently to moisture, and to one-off events such as leaks or flooding.

GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® feature a water-resistant polymer impregnated core, designed for wet area applications. These core formulations not only resist penetration of moisture through the lining into the framing behind, but also resist water “wicking” up the core, a common cause of long-term damage where a water-resistant lining has not been used.

WATER ABSORPTION TEST

The illustrations below show how GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® compare with standard plasterboard after soaking for two-hours in green dye.



WHERE TO USE GIB® WET AREA LININGS

In order to prolong the life expectancy of the space it is highly desirable to include wet area linings in situations where there is an increased risk of water or moisture damage. Applications include walls and ceilings in bath and shower rooms, and walls in laundries, toilets and kitchens.

BENEFITS

- Water resistant and durable linings help protect against water damage
- Proven substrate for paint, wallpaper, waterproofing membranes, tiles, sheet vinyl and rigid sheet shower linings
- Suitable for both residential and non-residential applications
- Dimensionally stable and an excellent substrate for ceramic tiles
- Conventional jointing methods
- Easy to cut and form openings
- Contains glass fibres and other additives to increase strength and fire resistance
- May be used in GIB® Bracing, GIB® Fire Rated and GIB Noise Control® Systems (see Compliance with the NZ Building Code, Clauses B1, C3 and G6). Consult the appropriate GIB® literature for installation details

HANDLING AND STORAGE

- GIB® plasterboard must be stored under cover, stacked flat and clear of the floor with sufficient support to avoid sagging
- GIB® plasterboard must be handled as a finishing material

LIMITATIONS

- GIB® wet area linings must not be used for bracing purposes in shower cubicles or above baths. For more information refer to page 9 of this manual
- Do not use GIB® wet area linings where exposed for extended periods to humidity levels above 90% RH, such as in group shower or steam rooms, or where exposed to moisture and chlorine rich environments such as in indoor swimming pools
- GIB® wet area linings used in a bathroom or other high humidity environment must not be directly applied to solid plaster (gypsum or cement), wood-based sheet linings or similar materials, masonry or concrete, without strapping or steel furring channels
- GIB® wet area linings must not be installed over a vapour barrier or a wall acting as a vapour barrier
- Cracked or damaged sheets must never be used
- GIB Aqualine® or GIB Toughline® Aqua must not be used in external applications
- GIB® plasterboard must not be exposed to temperatures in excess of 52°C for prolonged periods. Heat-generating devices may include halogen lighting, cooking elements, radiant heating, solid fuel exhausts and fire surrounds. Consult the appliance manufacturer for installation details

Table 1: GIB® Wet Area linings sheet dimensions and weights

Product	Sheet face colour	Thickness (mm)	Sheet width (mm)	Edge Type	Sheet length (mm)						Max. Weight (kg/m ²)
					2400	2450	2700	3000	3600	4800	
GIB Aqualine®	Green	10	1200	TE/TE	■		■	■	■		8.0
			1200	TE/SE					■		
			1350	TE/SE				■			
		13	1200	TE/TE	■		■	■		11.0	
GIB Toughline® Aqua	Mauve	13	1200	TE/TE	■		■	■		11.4	
GIB Weatherline®	Purple	10	1200	SE/SE		■	■	■		9.0	
		13	1200	SE/SE			■	■		11.5	

BOARD SUBSTITUTION OPTIONS

Acceptable GIB Aqualine® alternatives	
10mm GIB Aqualine® can be replaced with:	10mm GIB Weatherline® 13mm GIB Toughline® Aqua
13mm GIB Aqualine® can be replaced with:	13mm GIB Weatherline® 13mm GIB Toughline® Aqua

GIB® Wet Area System construction details in this manual refer to the use of GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® sheets may also be used in place of GIB Aqualine®.

FLEXIBLE SHEET VINYL – SHOWERS AND OTHER WET AREAS

- GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® are suitable substrates for flexible vinyl wall finishes in wet areas of residential, commercial or institutional buildings
- Framing requirements and installation procedures are presented in this literature, except that the lining gap at the floor is no more than 5mm when a pencil cove detail is used
- The installation of galvanised steel reinforcing angles behind internal lining corners is recommended for sheet vinyl applications in showers or shower over bath situations
- The lining must be jointed and stopped to a paint quality finish (Level 4) – trowel marks can telegraph even through a commercial grade 2mm vinyl
- A commercial grade vinyl is recommended in commercial or institutional bathrooms and showers
- In areas directly exposed to liquid water, all joints in flexible sheet vinyl must be heat welded
- Installation of flexible vinyl must be carried out strictly in accordance with the specifications provided by the suppliers/ manufacturers of the vinyl

RIGID SHEET SHOWER LININGS

- The wall surface must be free of dust before installation of the lining
- Avoid lining joints as much as possible and where necessary flush with plaster to achieve a level surface
- Do not pre-seal or paint areas which are to be covered by the rigid shower linings
- The suppliers of thin (usually 2-3mm) and rigid acrylic shower linings commonly recommend direct adhesive fixing to wall linings using solvent-based adhesives
- Care must be taken to ensure that rooms are adequately ventilated
- Water temperature changes will cause movement of the thin acrylic sheet, which in turn will stress the adhesive and wall lining substrate
- Consult the supplier of the shower lining for full installation details
- Suppliers of rigid sheet acrylic shower linings recommend a minimum of 24 hours for the adhesive to cure fully prior to the shower being put into service

WATERPROOF MEMBRANE SYSTEMS AND TILING

- A waterproof membrane system must be applied to lining materials used as a substrate for ceramic tiles in a shower or shower over bath situation
- The wall surface in a shower or shower over bath situation is not complete and ready for tiling until coated with a waterproof membrane system over the lining and once penetrations for shower mixers, taps and associated fittings are sealed
- The installation of galvanised steel reinforcing angles behind internal lining corners is required for tiled wall applications in showers or shower over bath situations
- In-situ waterproofing membrane materials manufactured to AS/NZS 4858:2004 “Wet Area Membranes” are recommended and must be applied to manufacturer’s recommendations. Typically, these types of membrane systems are not suitable for paint and wallpaper finishes
- Waterproof membrane systems must be fully cured and dry prior to application of tiling adhesives
- Preformed sheet membranes are also available and may be more suitable where curing times or specialist skills are an issue
- The details shown in this manual are generic in nature. For accurate detailing, follow the specifications provided by the supplier of the proprietary waterproof membrane system

For further information on tiling consult the BRANZ Good Practice Guide – Tiling.

PENETRATIONS AND SEALANTS

As leaks and water ingress typically occur at junctions between building elements and at penetrations, it is essential that particular attention is given to these details at the time of installation. Lack of attention to detail can result in water damage that could remain undetected for a long time.

- Ensure that all cut-outs for pipe penetrations are made neatly, and slightly oversize, with a hole saw. These penetrations should be of a diameter no more than 12mm greater than that of the pipe
- Ensure shower mixer and tap penetrations are sealed with a proprietary flange system to prevent the passage of moisture into the wall cavity
- Sealants should be of a mould inhibiting type and be paintable. Neutral cure silicones will generally meet these requirements
- Surfaces should be dry and free from dust before application, a minimum of a 4mm joint width provided and the depth should not exceed the width
- Apply a bead of sealant to the full depth of the lining in the following locations:
 - Around all tap/pipe bodies
 - The gap between the bath rim and the bottom edge of the wet area lining
 - Between the upstand of preformed shower bases and the bottom edge of the lining
 - Where an impervious junction is required at the floor/wall line, carefully seal the gap between the bottom edge of the board and the finished floor. Leave a 5-10mm gap at the bottom of the wall lining for this purpose, ensuring the gap is free from dirt and dust
- Do not locate shower heads or taps on fire rated or intertenancy walls. Should this be unavoidable always use tested and approved proprietary penetration seals

RENOVATIONS

Bathrooms, kitchens and laundries are the most renovated rooms in the house, partly due to fashion considerations and partly because of damage sustained by ingress of water and moisture.

When renovating these rooms it is often easier and more cost-effective to remove the existing linings and replace them. This allows for a new start in the room and offers sound substrates for new surfaces such as tiling and painting, where otherwise flaking paint or damaged plasterboard may compromise good and sound finish or practice. At the very least re-lining will:

- Allow for inspection of framing where damage may have occurred and provide the opportunity to repair such damage
- Allow plumbing and electrics to be checked and altered or replaced where required
- Provide the opportunity to install thermal and acoustic insulation, water-resistant linings, and propriety plumbing penetration flange systems where appropriate
- Make the job easier

MAINTENANCE

Lack of maintenance is frequently the cause of premature and often expensive failure of components and building elements within wet areas.

It is important to regularly inspect and repair any potential problem before it becomes expensive to reinstate. Good maintenance should include:

- Ongoing ventilation. At the very least, good passive ventilation (e.g. window vents); but good active ventilation (e.g. extraction fans) of an appropriate size for the room is recommended
- Impervious coatings and surfaces should be checked for wear and damage and maintained and re-coated before ingress of water to the substrate occurs
- Regular cleaning with appropriate cleaners so that build-up of matter, such as mould, is well controlled
- Sealants at junctions and penetrations should be checked for adhesion on a regular basis and replaced where adhesion failure to substrates occurs
- Where pipe leaks have become evident, however small, they should be repaired promptly and any area around such leaks dried out completely before any other repairs are carried out

Compliance with the NZ Building Code

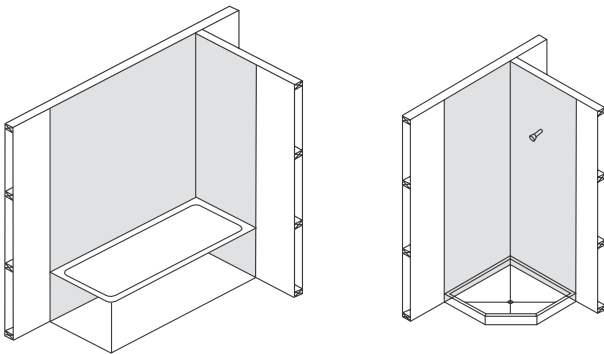
STRUCTURE – CLAUSE B1

The design and material specification for steel and timber framing used in GIB® Wet Area systems must be in accordance with the performance requirements of NZ Building Code Clause B1 (Structure).

Bracing elements are required to have a durability of 50 years. GIB® bracing elements are not to be located in shower cubicles or behind baths because of durability requirements, the likelihood of renovation, and practical issues associated with fixing bracing elements to perimeter framing members, such as at bath and shower tray locations.

Otherwise, GIB® Bracing Systems can be used in water-splash areas, provided these are maintained impervious for the life of the building.

GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® can be used in place of GIB® Standard plasterboard in GIB® bracing elements. They can also be used in place of GIB Braceline® in GIB® bracing elements 900mm or longer, provided the perimeter of the element is fixed with GIB® Grabber 32mm x 6g screws at 100mm centres, using the GIB Braceline® corner fixing pattern. Refer to the GIB® Bracing System literature.



No bracing in the shaded areas.

DURABILITY – CLAUSE B2

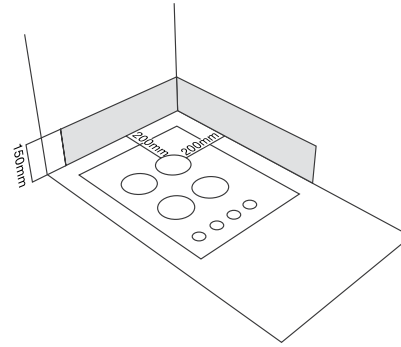
When installed and maintained in accordance with this literature, GIB® Wet Area systems tiled or vinyl covered have a serviceable life of at least 15 years. They comply with the requirements of NZ Building Code Clause B2 (Durability) for use in wet areas directly exposed to liquid water, e.g. showers, showers over baths and splash-backs.

When used as a general wet area lining and maintained under normal dry internal conditions, GIB® Wet Area Systems have a serviceable life of at least 50 years and comply with NZ Building Code Clause B2 (Durability) for use within toilets, kitchens, bathrooms and laundries not directly exposed to liquid water.

FIRE AFFECTING AREAS BEYOND THE SOURCE – CLAUSE C3

GIB® Fire Rated Systems provide passive fire protection in accordance with the requirements of NZ Building Code Clause C3. When GIB Aqualine® or GIB Toughline® Aqua is substituted into fire rated systems in place of the equivalent thickness GIB Fyrelite®, the Fire Resistance Rating (FRR) of that system will be maintained.

The protection of combustible surfaces surrounding gas cooking appliances is covered by the latest version of AS/NZS 5601.1.



As a guide the following options are acceptable for wall surfaces within 200mm of the periphery of a gas element to a height of 150mm above the element for the full dimension (width and depth) of the cooktop surface area:

- 5mm tiles on GIB® plasterboard
- 5mm toughened glass on GIB® plasterboard
- or any system that can be demonstrated to meet the specific requirements of AS/NZS 5601.1

GIB® plasterboard products must not be exposed to temperatures in excess of 52°C for sustained periods. Check with the appliance manufacturer that this requirement will be met. It would be unusual for surfaces outside 200mm to exceed 52°C for sustained periods.

INTERNAL MOISTURE - CLAUSE E3

The New Zealand Building Code Clauses that relate to wall surfaces are;

E3.3.4 - Wall surfaces adjacent to sanitary fixtures or sanitary appliances must be impervious and easily cleaned.

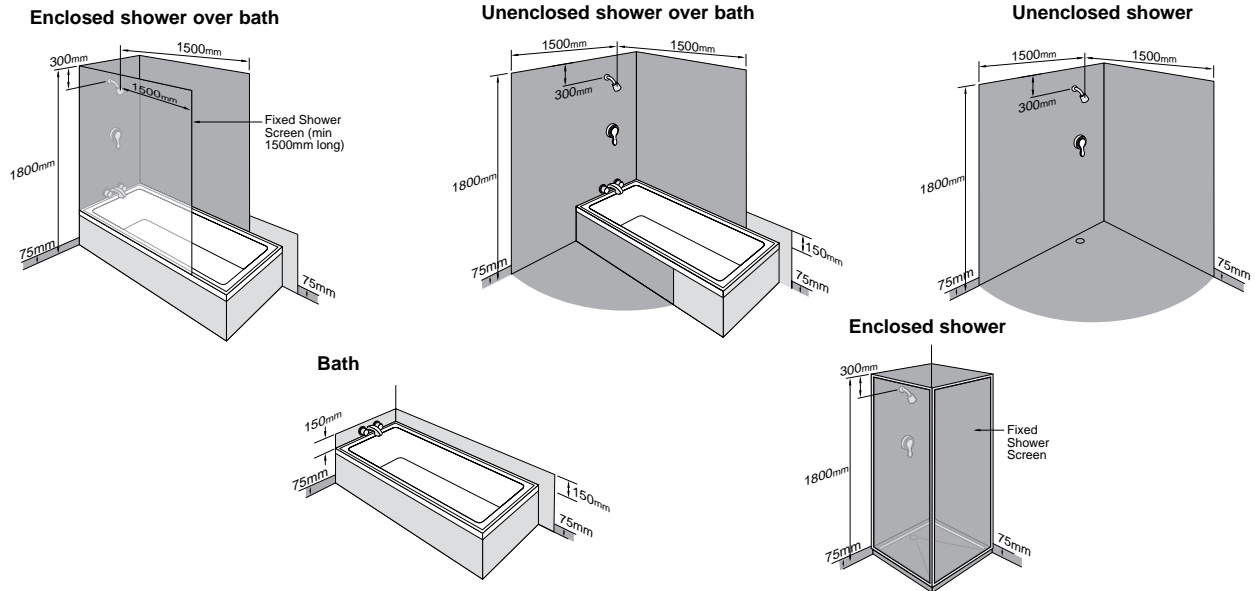
E3.3.5 - Surfaces of the building elements likely to be splashed or become contaminated in the course of the intended use of the building, must be impervious and easily cleaned.

E3.3.6 - Surfaces of building elements likely to be splashed must be constructed in a way that prevents water splash from penetrating behind linings or into concealed spaces.

New Zealand Building Code Acceptable Solution E3/AS2 substantially refers to the Waterproof Membrane Association Incorporated (WMAI) Code of Practice for Internal Wet Area Membrane Systems (IWAM), August 2020.

The IWAM Code of Practice refers to wet area membranes and over-surfaces that are easy to clean and suggests an extent as outlined below for a typical bathroom application. For further details refer to the IWAM Code of Practice which also lists suitable rigid sheet materials and tiling membranes.

Shaded areas in the diagrams below represent the minimum extent of wall surfaces requiring impervious sheet materials or waterproof membrane systems prior to tiling.



HAZARDOUS BUILDING MATERIALS – CLAUSE F2

At no stage during its serviceable life does GIB Aqualine® constitute a health hazard. It therefore meets the provisions of NZ Building Code Clause F2 (Hazardous Building Materials). Dust resulting from the sanding of stopping compounds may be a respiratory irritant and the use of a suitable facemask is recommended.

VENTILATION – CLAUSE G4

NZ Building Code Clause G4 (Ventilation) requires buildings to have a means of collecting or otherwise removing steam generated from laundering, utensil washing, bathing or showering. To prolong the life of interior linings and surface finishes and to minimise the risk of moisture related problems such as condensation and mould growth, adequate heating, thermal insulation and mechanical ventilation must be provided in kitchens, bathrooms and laundries.

AIRBORNE AND IMPACT SOUND – CLAUSE G6

GIB® Noise Control Systems can be used to provide ratings for Sound Transmission Class (STC) and Impact Insulation Class (IIC) in accordance with the requirements of NZ Building Code Clause G6 (Airborne and Impact Sound). When GIB Aqualine®, GIB Toughline® Aqua or GIB Weatherline® is substituted into GIB® Noise Control systems in place of the equivalent thickness GIB® Standard plasterboard or GIB Fyrelite®, the STC and IIC rating of that system will be maintained. When GIB Aqualine®, GIB Toughline® Aqua or GIB Weatherline® is substituted in place of the equivalent thickness GIB Noiseline®, a small performance loss may occur. For further information refer to the GIB Noise Control® Systems literature or contact the GIB® Helpline 0800 100 442.

TIMBER WALL FRAMING

Framing dimensions must comply with the requirements of NZS 3604:2011.

- The moisture content of timber framing shall be 18% or less at the time of lining
- Studs shall be spaced at 600mm centres maximum for both 10mm and 13mm GIB® plasterboard
- Nogs to be evenly spaced with a maximum spacing of 1350mm. Alternatively, nogs may be staggered 150mm maximum either side of a horizontal joint line
- Nogs are not required behind horizontal joints except in shower situations or specific fire or noise control systems

FASTENERS

- Minimum 32mm x 6g GIB® Grabber® High Thread screws.

FASTENER CENTRES

- 300mm centres to top and bottom plates and to perimeter studs
- Single fasteners to each stud where the horizontal joint crosses the studs

- Place fasteners 12mm from sheet edges and 18mm from sheet ends
- Daubs of GIBFix® adhesive at 300mm centres to intermediate studs
- Do not place adhesive at sheet edges or under fasteners. Sheet edges at door or window openings can be adhesive fixed unless forming part of the perimeter of a bracing element

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

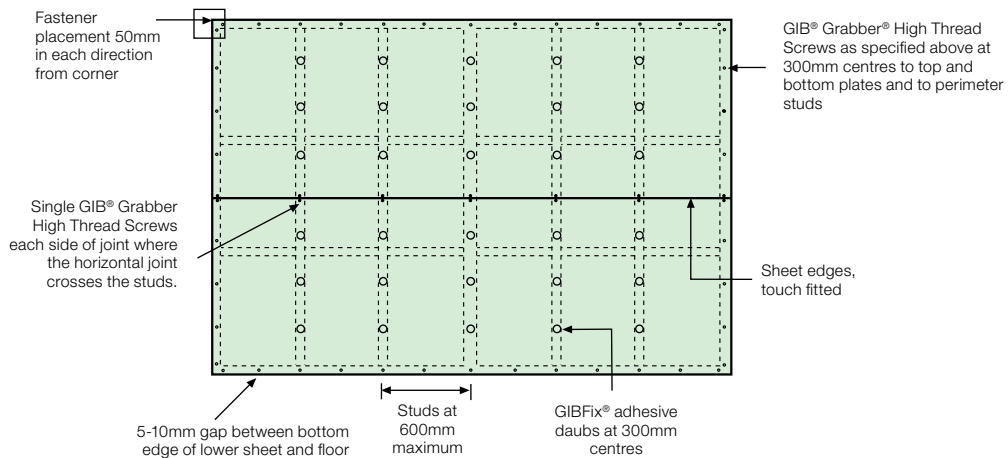
LINING

- Use minimum 10mm GIB® plasterboard
- Install the sheets leaving a 5-10mm gap at the floor line to allow for movement of the framing members and to allow for cleaning dirt and rubbish before sealing
- Sheets to be touch fitted.

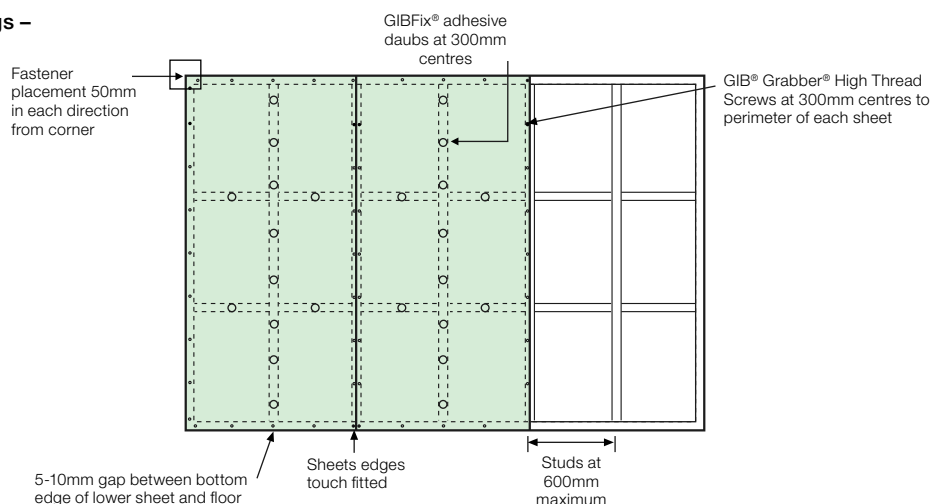
JOINTING

- Jointing shall be carried out in accordance with the instructions in the GIB® Site Guide.

Fastening the Linings – Horizontal Fixing Only



Fastening the Linings – Vertical Fixing Only



STEEL WALL FRAMING

The minimum sheet thickness for fixing on light gauge 0.55mm base metal thickness (BMT) steel framing is 13mm GIB® plasterboard. For bracing, noise control or fire rating applications consult the relevant GIB® technical publication.

Steel frame for residential construction is in accordance with NZBC B1/AS1 9.1 NASH Standard Part 2 Light Steel Framed Buildings, or by specific design. 10mm GIB plasterboard is commonly used on minimum 0.75mm BMT residential steel framing.

FASTENERS

- Minimum 25mm x 6g GIB® Grabber® Self Tapping Screws.

FASTENER CENTRES

- 300mm centres to top and bottom channels and to end studs
- Single screws to each stud where the horizontal joint crosses the studs
- Place fasteners 12mm from sheet edges and 18mm from sheet ends

- Daubs of GIBFix® All-Bond adhesive or screws at 300mm centres to intermediate studs
- Do not place adhesive at sheet edges or under fasteners.
- Sheet edges at door or window openings can be adhesive fixed.

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

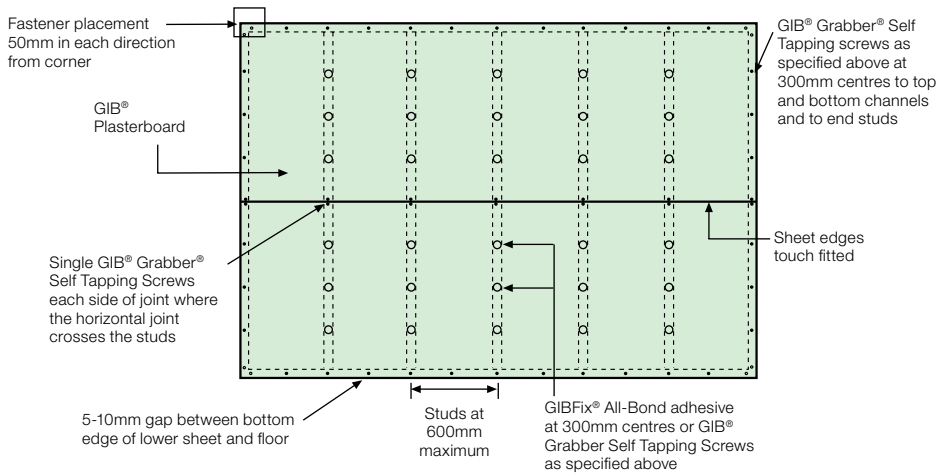
LINING

- Lay the sheets, leaving a 5-10mm gap at the floor line.
Note: If friction fitted steel studs have been used, sheets must be fitted hard to the floor. Ensure floor is cured and dry
- Sheets to be touch fitted.

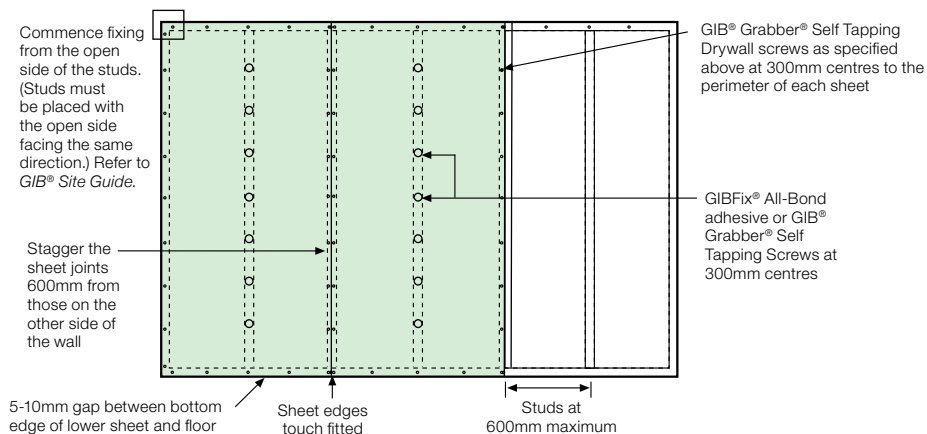
JOINTING

- Jointing shall be carried out in accordance with the instructions in the GIB® Site Guide

Fastening the Linings – Horizontal Fixing Only



Fastening the Linings – Vertical Fixing Only



TIMBER WALL FRAMING

Framing dimensions and spacing must be appropriate for the tile weight and comply with the requirements of NZS 3604:2011 Timber Framed Buildings, or relevant specific design Standard.

NOGS

For impact protection in shower cubicles or shower over bath situations it is important that all sheet joints are made on solid framing. This may require vertical fixing or the installation of additional noggs. Also provide noggs:

- Adjacent to each pipe penetration and behind sink and tub flashings
- Between all studs above bath flanges and preformed shower bases

CORNER REINFORCING

- Prior to lining in tiled areas (shower cubicles and shower over bath only) the internal corners shall be reinforced with a minimum
- 32 x 32 x 0.55mm NZ18 or 45 x 45 x 0.55mm GIBFix® Angle. Each leg shall be fastened to the framing at 300mm centres

FASTENERS

- Minimum 32mm x 6g GIB® Grabber® High Thread Screws

FASTENER CENTRES

- 150mm centres to perimeter of wall and all intermediate studs
- Adhesive is not to be used in place of mechanical fasteners
- Place fasteners 12mm from sheet edges and 18mm from sheet ends

- Single fasteners to each stud where the horizontal joint crosses the studs
- Where relevant, fastener lengths must comply with the requirements of GIB® Fire Rated Systems or GIB® Noise Control Systems

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

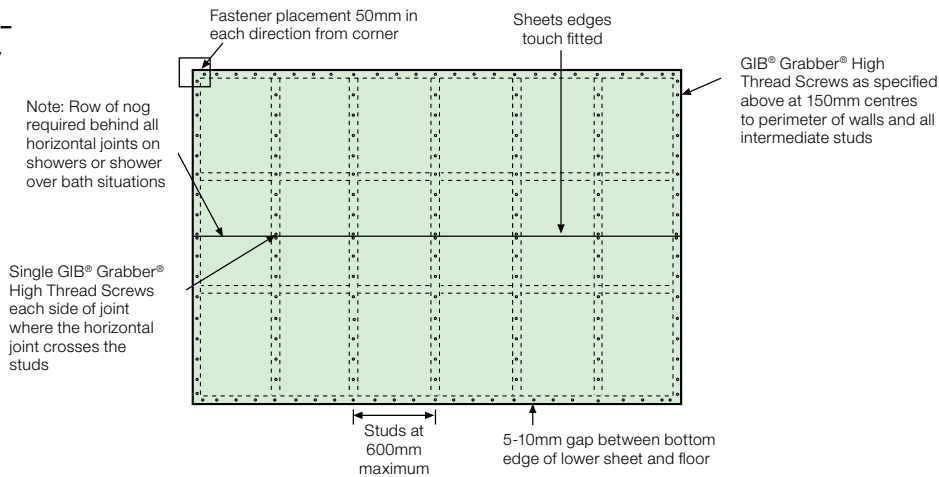
LINING AND TILE WEIGHTS

- Use minimum 10mm GIB® plasterboard
- For maximum permitted tile weights refer to pg 16 of this manual
- GIB® Wet Area linings may be fixed vertically or horizontally
- Sheets are touch fitted
- Provide a 5-10mm gap at the wall/floor junction and between the bottom edge of the lining and any bath rim or preformed shower base to allow for placement of sealant
- Do not tile on the resilient side of GIB Rail® or STWC Acoustic Clip (ST001) and channel noise control system
- GIB® Wet Area linings are suitable for tiling full height of walls, but if a wall is to be partially tiled (e.g. half high), only the area of wall under the tiles needs to be fixed as required for tiled areas. The remainder of the wall may be fixed as for non-tiled areas

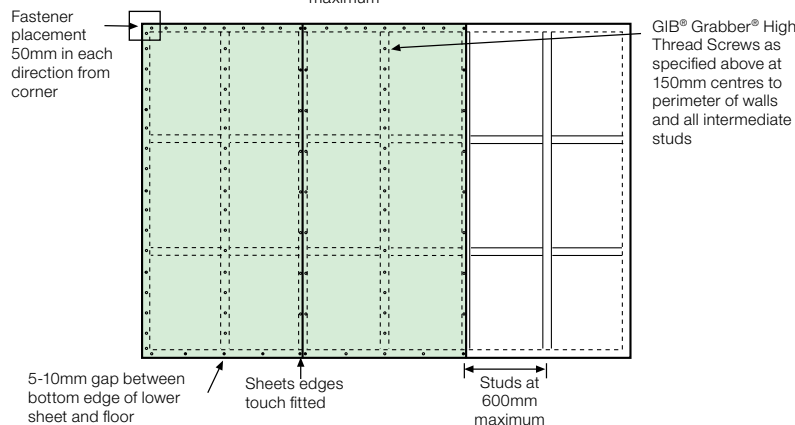
JOINTING

- Jointing shall be carried out in accordance with the instructions of the GIB® Site Guide

Fastening the Linings – Horizontal Fixing Only



Fastening the Linings – Vertical Fixing Only



STEEL WALL FRAMING

Framing dimensions and spacing must be appropriate for the tile weight and comply with the requirements of NASH Standard Part 2:2019 Light Steel Framed Buildings, or relevant specific design Standard.

- Linings are placed hard to floor, bedded into a sealant bead
- Steel framing for tiling to have a minimum base metal thickness (BMT) of 0.75mm

NOGS

For impact protection in shower cubicles or shower over bath situations it is important that all sheet joints are made on solid framing. This may require vertical fixing or the installation of additional noggs.

- Adjacent to each pipe penetration and behind sink and tub flashings
- Between all studs above bath flanges and preformed shower bases

CORNER REINFORCING

- Prior to lining in tiled areas (shower cubicles and shower over bath only) the internal corners shall be reinforced with a minimum
- 32 x 32 x 0.55mm NZ18 or 45 x 45 x 0.55mm GIBFix® Angle. Each leg is fastened to the framing at 600mm centres

FASTENERS

- Minimum 32mm x 6g GIB® Grabber® Self Tapper screws

FASTENER CENTRES

- 150mm centres to perimeter of wall and all intermediate studs
- Adhesive is not to be used in place of mechanical fasteners
- Single screws to each stud where the horizontal joint crosses the studs
- Place fasteners 12mm from sheet edges and 18mm from sheet ends.

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

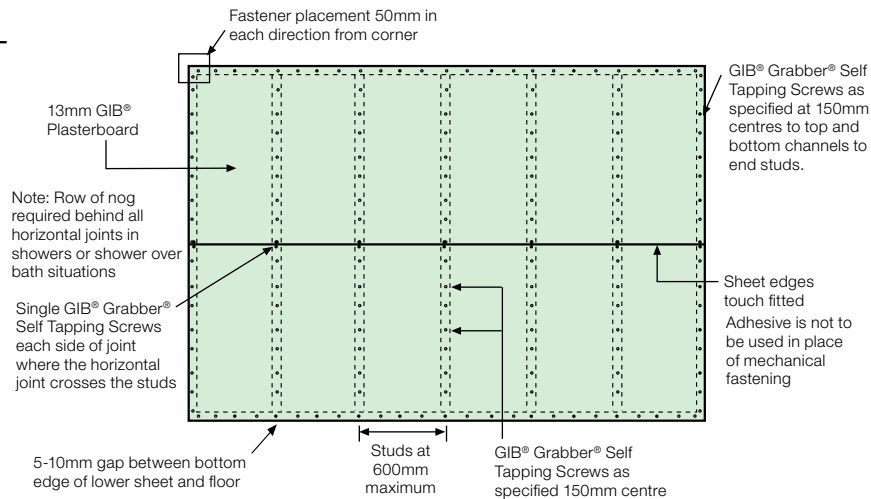
LINING AND TILE WEIGHTS

- Use minimum 13mm GIB® plasterboard
- For maximum permitted tile weights refer to pg 16 of this manual
- GIB® Wet Area linings may be fixed vertically or horizontally
- Sheets are touch fitted
- Provide a 5-10mm gap at the wall/floor junction and between the bottom edge of the lining and any bath rim or preformed shower base to allow for placement of sealant
- Do not tile on the resilient side of GIB Rail® or STWC Acoustic Clip (ST001) and channel noise control system
- GIB® Wet Area linings are suitable for tiling full height of walls, but if a wall is to be partially tiled (e.g. half high), only the area of wall under the tiles needs to be fixed as required for tiled areas. The remainder of the wall may be fixed as for non-tiled areas

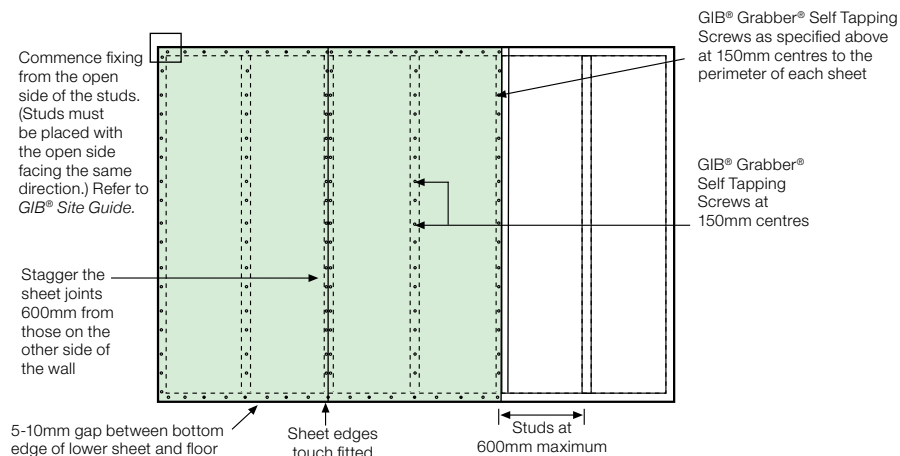
JOINTING

- Jointing shall be carried out in accordance with the instructions of the GIB® Site Guide

Fastening the Linings – Horizontal Fixing Only

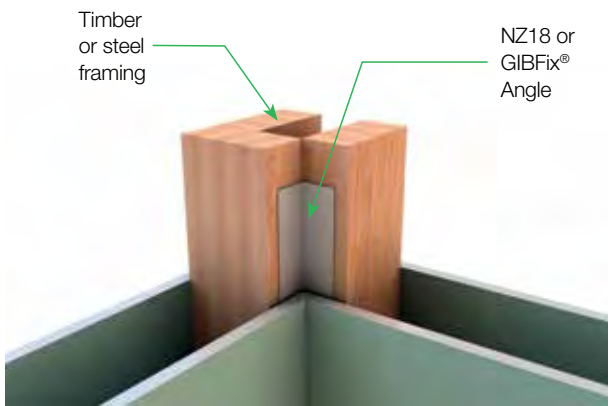
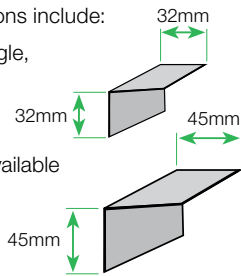


Fastening the Linings – Vertical Fixing Only



METAL ANGLES FOR TILED INTERNAL CORNERS

- Prior to lining in tiled areas (shower cubicles and shower over bath only) the internal corners shall be reinforced with a minimum 32 x 32 x 0.55mm galvanised metal angle.
- Suitable GIB® metal angle options include:
 - GIB® Rondo® NZ18 metal angle, available length: 3.0m
 - GIBFix® Angle metal angle, available lengths: 2.4m and 2.7m
- Each side of the angle is secured to the framing with at 600mm centres
- Minimum height of the metal angle is 1800mm


WATERPROOF MEMBRANE SYSTEMS

A waterproof membrane system must be applied to all lining materials used as a substrate for ceramic tiles in a shower or shower over a bath application, or any other tiled application exposed to frequent water splash.

For further information see p10.

TILES AND TILE WEIGHTS

In areas likely to be directly exposed to water, tiles may be ceramic, porcelain or stone must comply with the over-surface finish requirements of the IWAM Code of Practice and be bedded with a suitable tile adhesive on the waterproof membrane system. See page 10 for the minimum extent of wall surfaces requiring impervious sheet materials or waterproof membrane systems prior to tiling.

Smaller mosaic tiles are often lighter, but the integrity of grout joints might be more prone to impact, whilst heavier tiles are larger and have less and deeper grout and sealant joints. For more information also see AS 3958:2007 Ceramic tiles – Guide to the installation of ceramic tiles.

Table 2: Recommended maximum tile weights

Maximum Tile Weights for GIB Aqualine®, GIB Toughline® Aqua or GIB Weatherline®			
Stud Centre (maximum)	Fasteners Centre (maximum)	Lining Thickness	Tile Weight
600mm maximum	150mm maximum	10mm	26kg/m ²
		13mm	40kg/m ²

ADHESIVE AND GROUT WEIGHTS

The weight of adhesive and grout can vary depending on the type of tile and the installation process used. The maximum tile weights stated in table 2 are conservative and refer to the tile weight excluding grout and adhesive used. An additional 3kg/m² has been factored into tile adhesion testing on top of the above stated tile weights to account for adhesive and grout weight used during the installation of the tile.

CEILING FRAMING

Framing dimensions and spacing must comply with the requirements of NZS 3604:2011, NASH for steel or relevant NZ Standard.

For noise control or fire rating applications consult the relevant GIB® technical publication.

FASTENERS

- Steel battens – 25mm x 6g GIB® Grabber® Self Tapping screws
- Timber battens or Joists – 32mm x 6g GIB® Grabber® High Thread screws

ADHESIVES

- Steel battens - GIBFix® All-Bond
- Timber battens - GIBFix® All-Bond or GIBFix® One

FASTENERS CENTRES

- Single screws to the edges and centre of the sheets across each batten
- Single screw at 600mm maximum to the perimeter of the ceiling
- Screws to be 12mm from sheet edges
- Daubs of adhesive at 200mm centres between the screws
- Do not place adhesive at sheet edges or under fasteners, this may lead to screw pops

LINING

- The lining shall be fixed at right angles to the battens or joists
- Commence fixing from the centre of the sheets outwards.
- Sheets to be touch fitted
- Use long length sheets to minimise sheet end butt joints.
- Back-block sheet end butt joints
- See GIB® Site Guide for sheet edge backblocking requirements

BATTEN SPACINGS

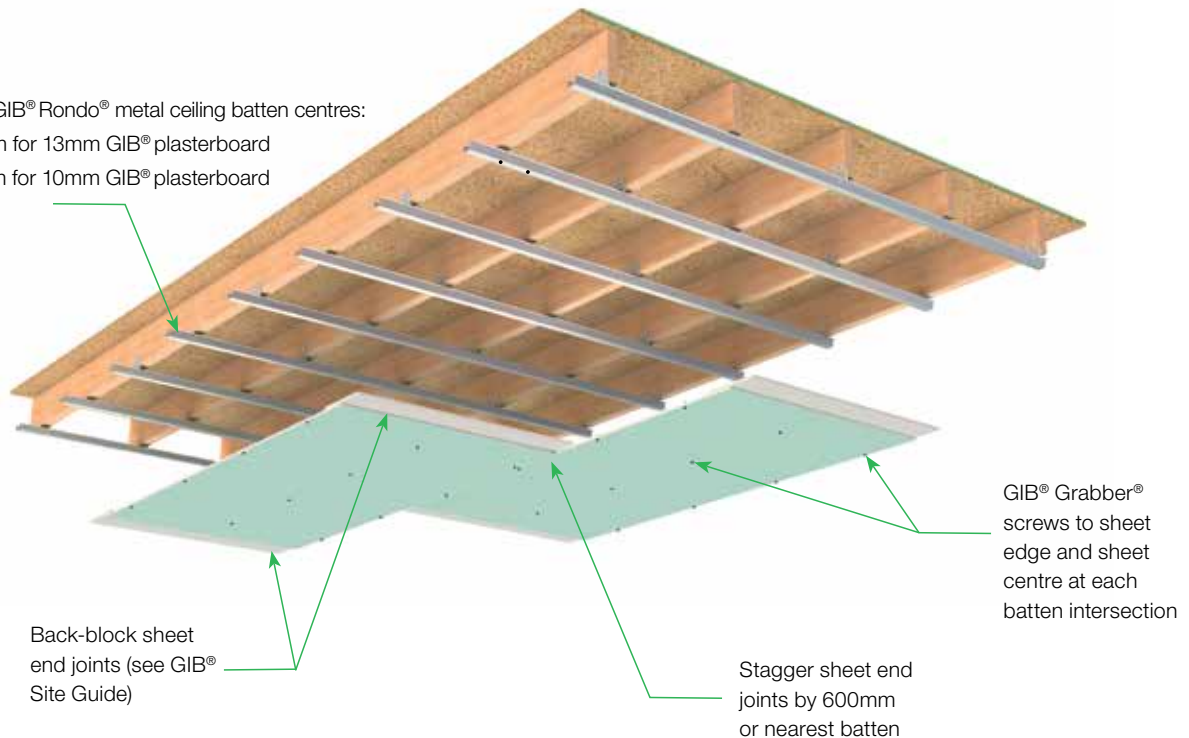
- 13mm GIB® plasterboard – 600mm centres maximum
- 10mm GIB® plasterboard – 450mm centres maximum

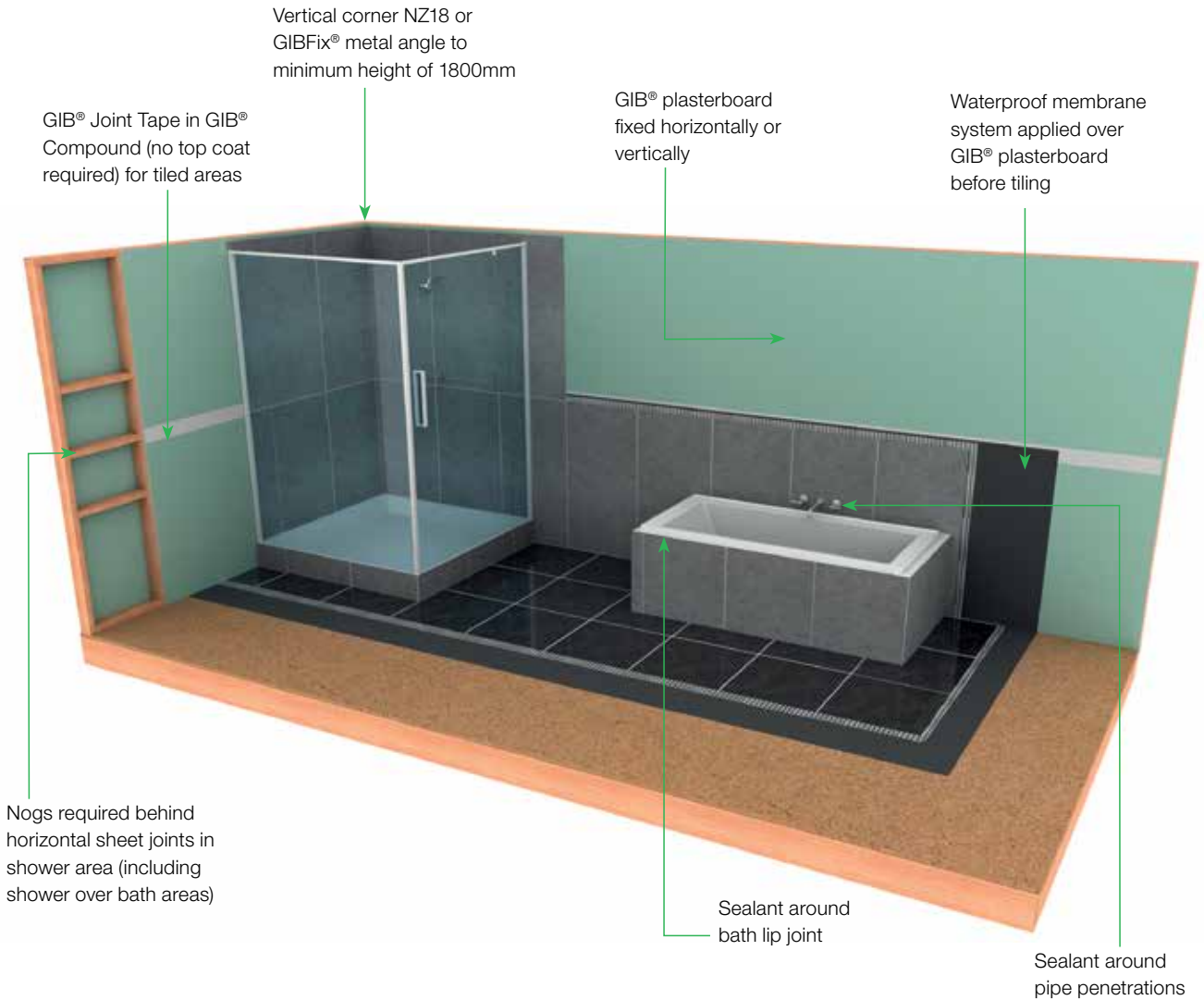
JOINTING

- All sheet joints must be paper tape reinforced and stopped in accordance with instructions in the GIB® Site Guide
- Do not fix tiles to GIB® plasterboard ceilings

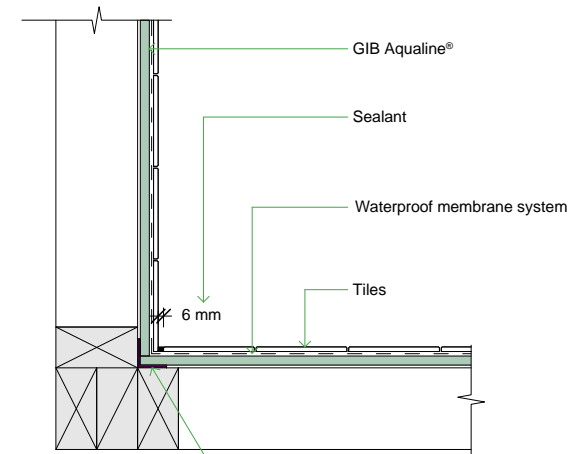
Maximum GIB® Rondo® metal ceiling batten centres:

- 600mm for 13mm GIB® plasterboard
- 450mm for 10mm GIB® plasterboard





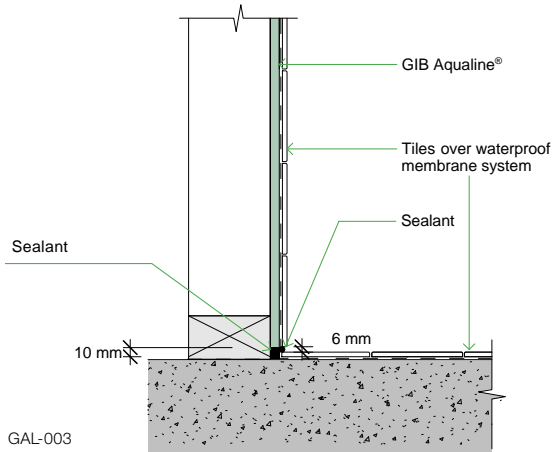
A: TILED INTERNAL CORNER



GAL-029

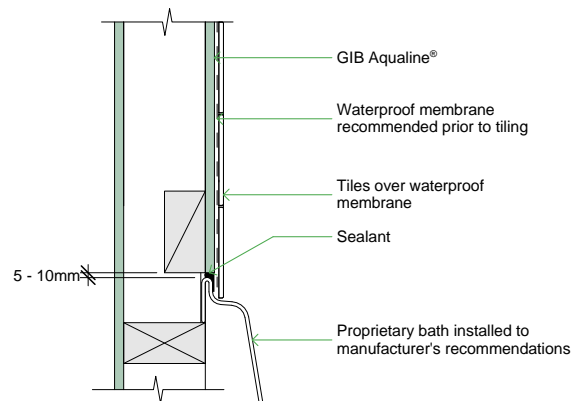
32 x 32 x 0.55mm vertical fixed galvanised steel angle NZ18 or GIBFix® Angle

B: CERAMIC FLOOR LINING JUNCTION



GAL-003

C: BATH LINING JUNCTION

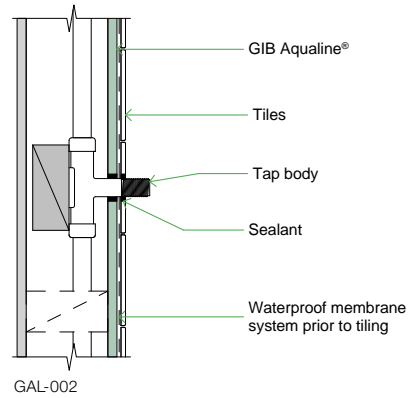


GAL-006

G: SHOWER MIXER PENETRATION IN WET WALL LININGS

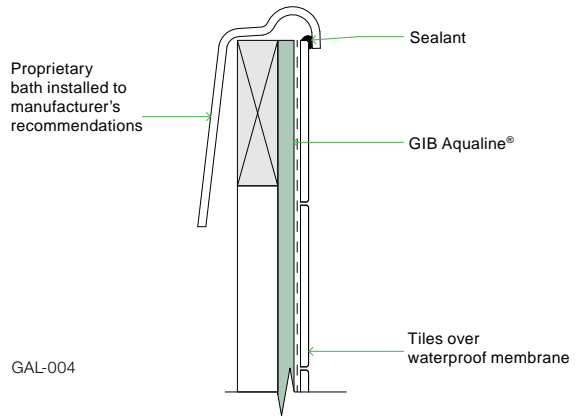
Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.

D: SEALING WET AREA PENETRATION



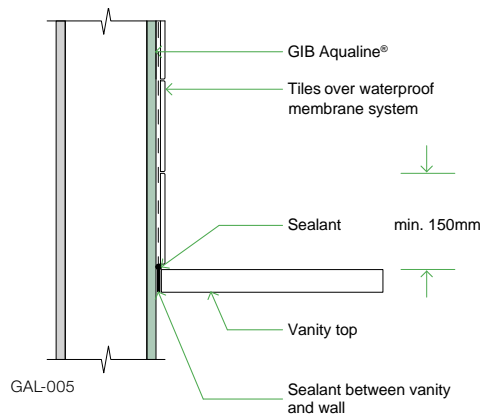
GAL-002

E: BATH CRADLE LINING DETAIL



GAL-004

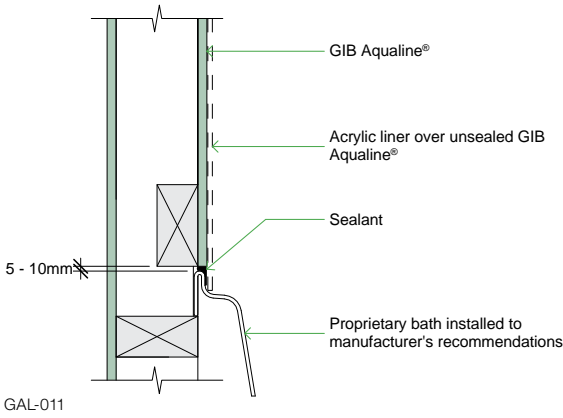
F: VANITY TOP LINING JUNCTION



GAL-005

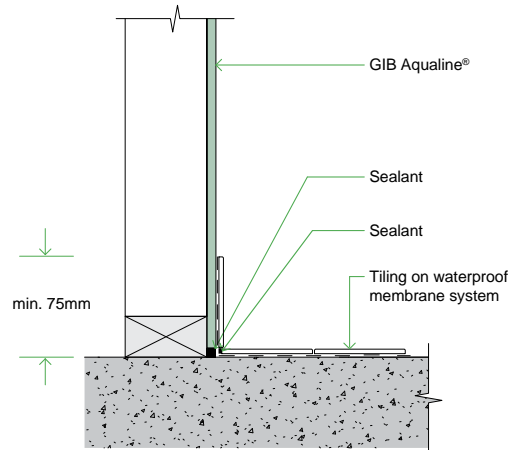


A: BATH LINING JUNCTION



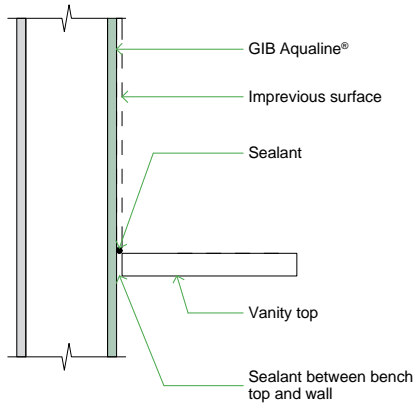
GAL-011

D: CERAMIC FLOOR SKIRTING LINING JUNCTION



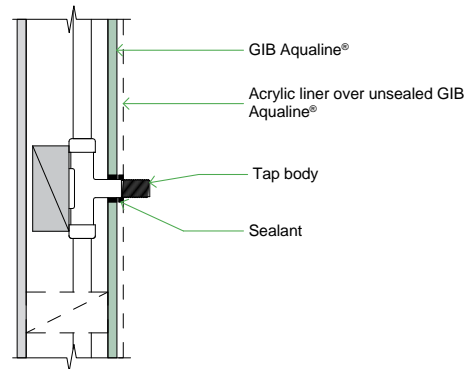
GAL-001

B: VANITY TOP LINING JUNCTION



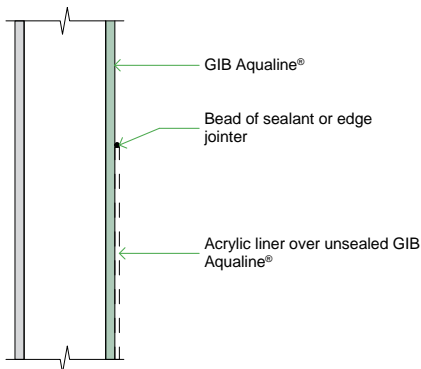
GAL-023A

E: SEALING SEMI WET AREA PENETRATION



GAL-019

C: UNSEALED PLASTERBOARD LINING



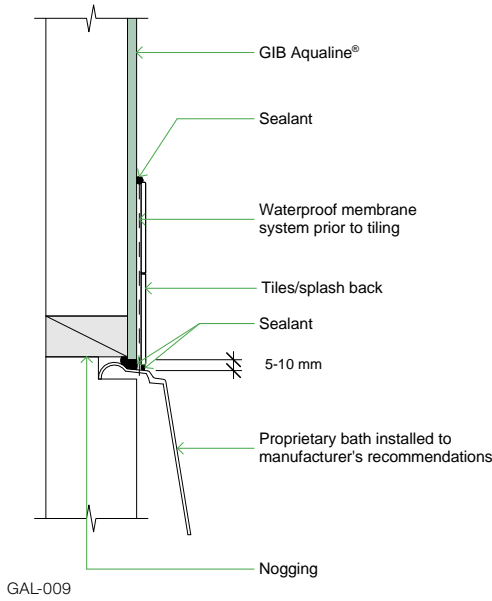
GAL-028

F: SHOWER MIXER PENETRATION IN WET WALL LININGS

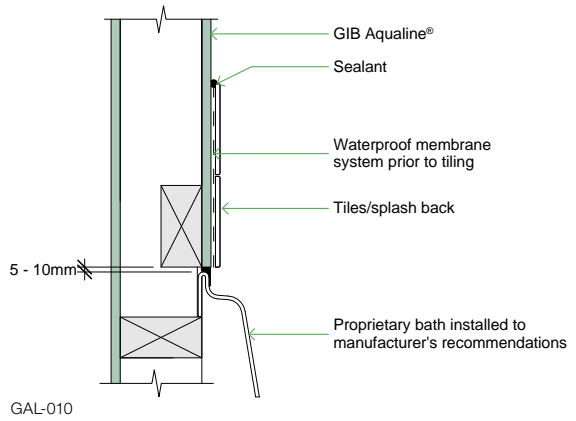
Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.



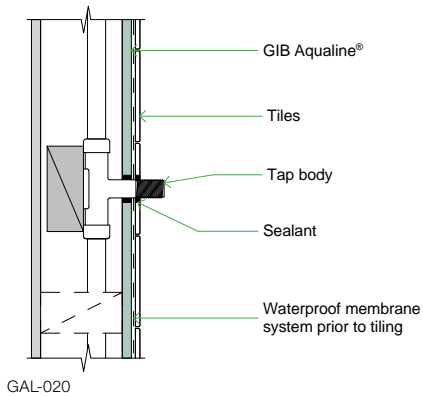
A: BATH LINING JUNCTION



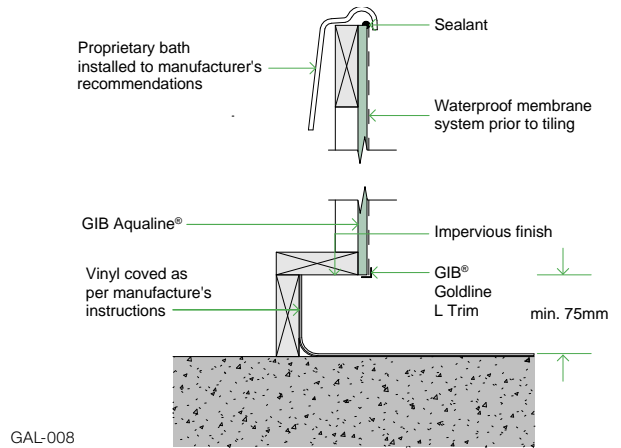
D: BATH LINING JUNCTION



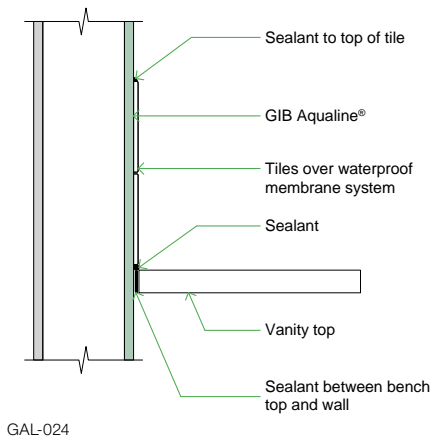
B: SEALING SEMI WET AREA PENETRATION



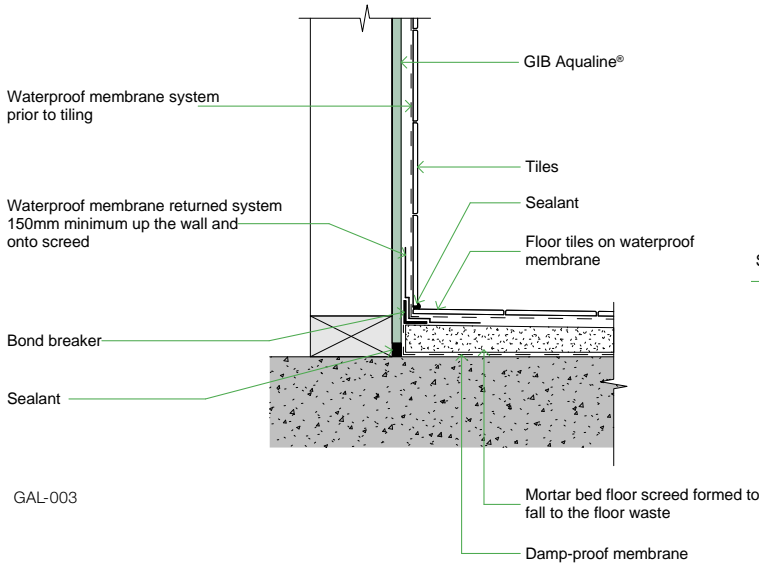
E: CRADLE VINYL LINING JUNCTION



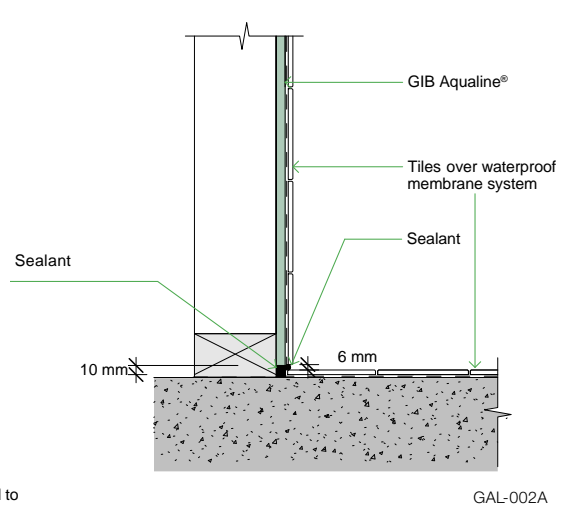
C: VANITY TOP LINING JUNCTION



A: MORTAR UNDER CERAMIC FLOOR LINING JUNCTION



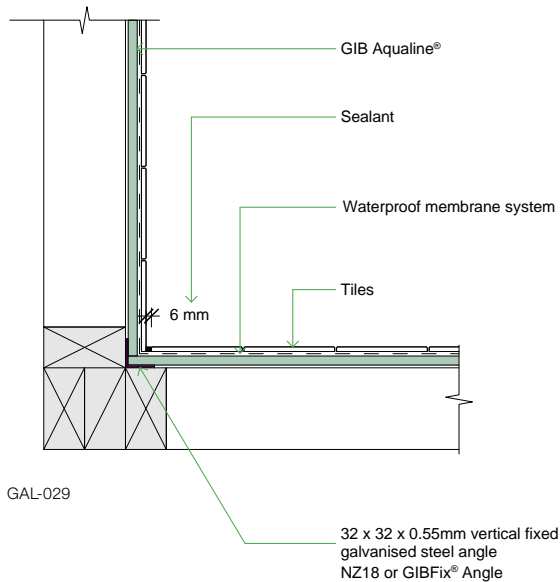
C: CERAMIC FLOOR LINING JUNCTION



PREFORMED SHOWER BASE JUNCTIONS

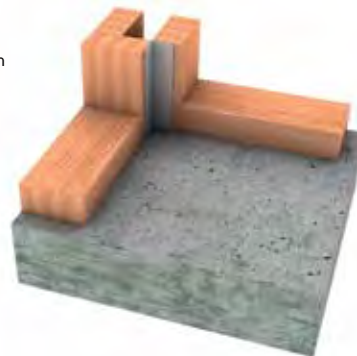
Refer to the shower base manufacturer for proprietary shower tray installation detailing including wet wall lining junction detailing.

B: TILED INTERNAL CORNER



D: TILED INTERNAL CORNER METAL ANGLE POSITION

Refer to page 16 of this publication for specification and installation guidance.

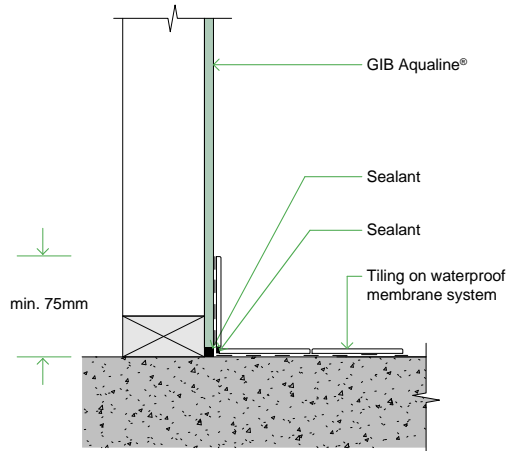


E: SHOWER MIXER PENETRATION IN WET WALL LININGS

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.

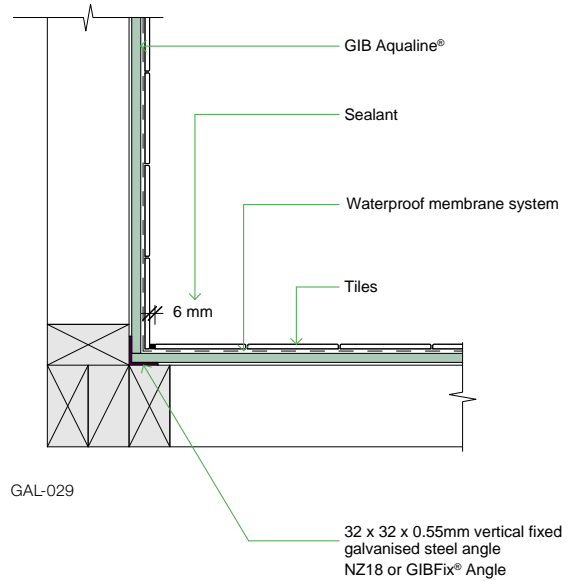


A: CERAMIC FLOOR SKIRTING LINING JUNCTION



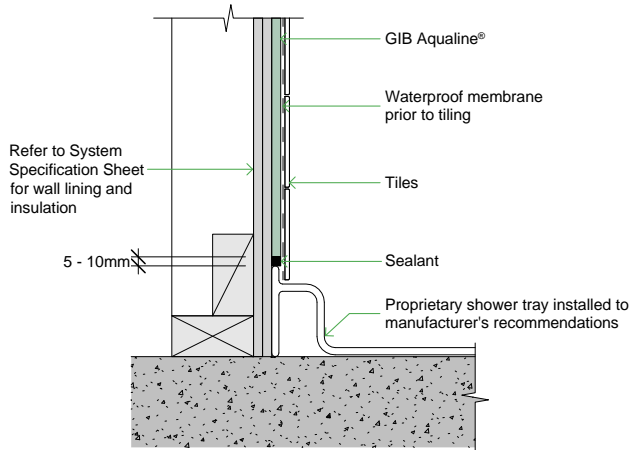
GAL-001

C: TILED INTERNAL CORNER



GAL-029

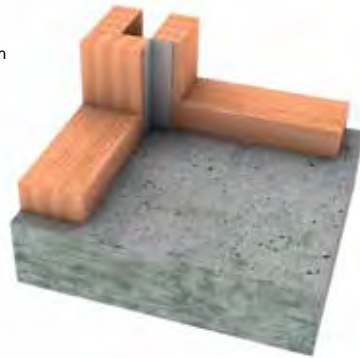
B: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION



GAL-016

D: TILED INTERNAL CORNER METAL ANGLE POSITION

Refer to page 16 of this publication for specification and installation guidance.

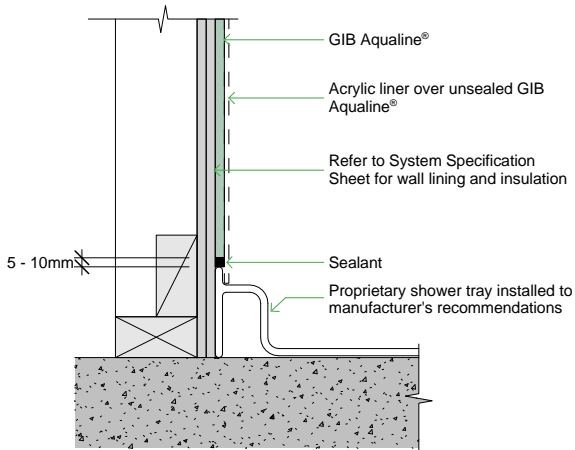


E: SHOWER MIXER PENETRATION IN WET WALL LININGS

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.

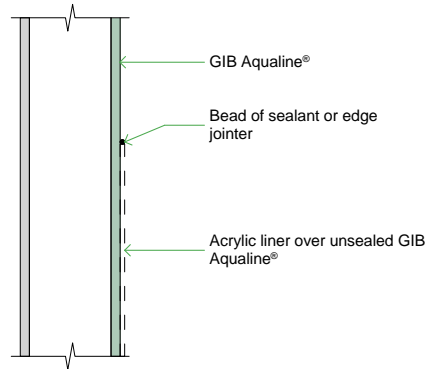


A: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION



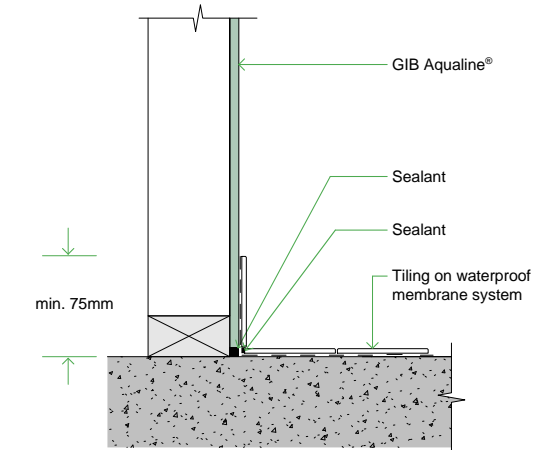
GAL-015

C: UNSEALED PLASTERBOARD LINING



GAL-028

B: CERAMIC FLOOR SKIRTING LINING JUNCTION



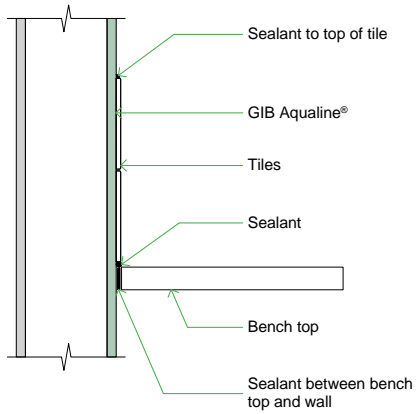
GAL-001

D: SHOWER MIXER PENETRATION IN WET WALL LININGS

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.

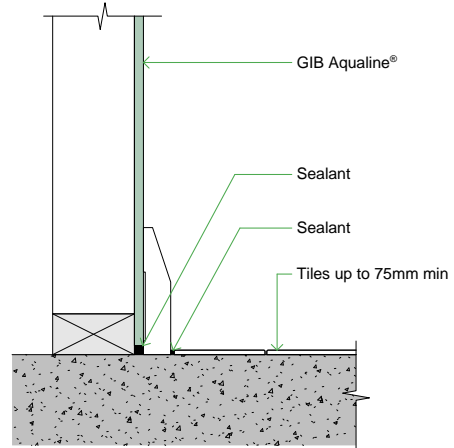


A: BENCH TOP LINING JUNCTION



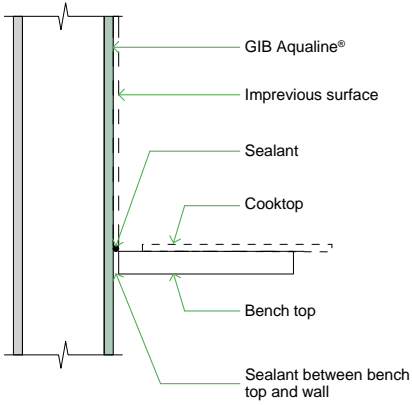
GAL-024

CERAMIC FLOOR SKIRTING LINING JUNCTION



GAL-001A

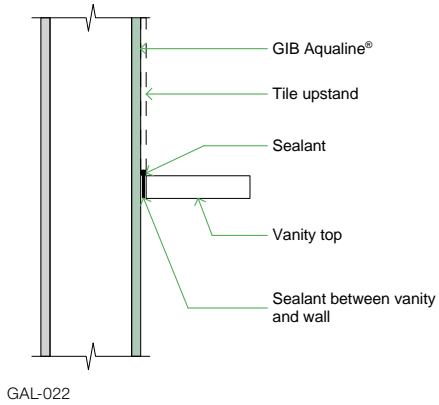
B: COOKTOP LINING JUNCTION



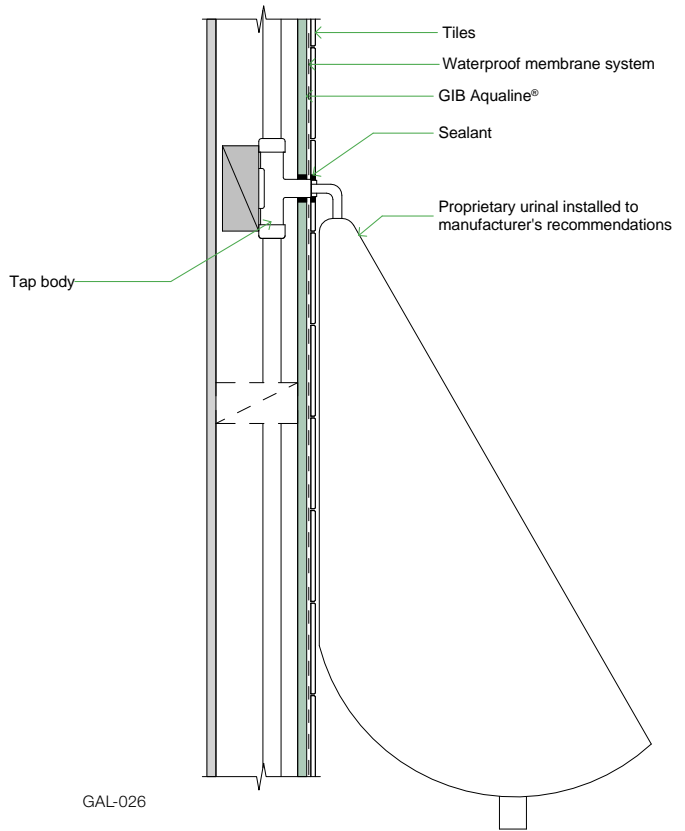
GAL-023B



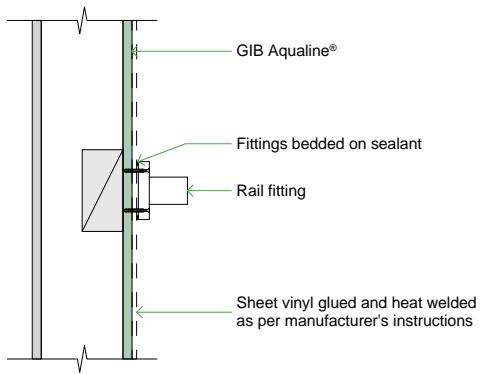
A: VANITY TOP LINING JUNCTION



B: SEALING WET AREA PENETRATION LINING JUNCTION

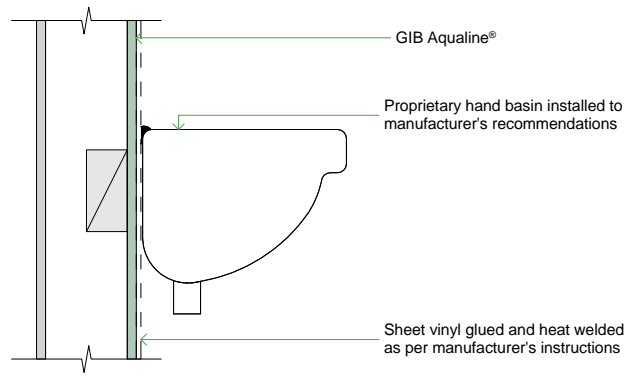


A: SURFACE MOUNTED WITH NOG



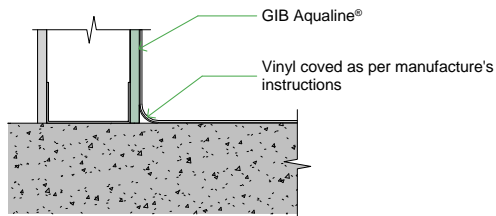
GAL-027

C: BASIN LINING JUNCTION



GAL-025

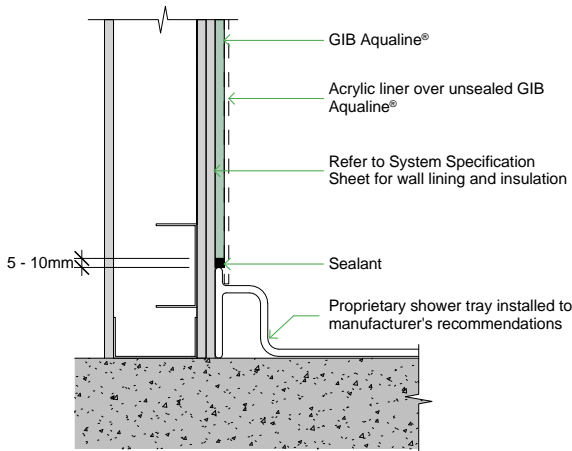
B: VINYL FLOOR LINING JUNCTION



GAL-006A

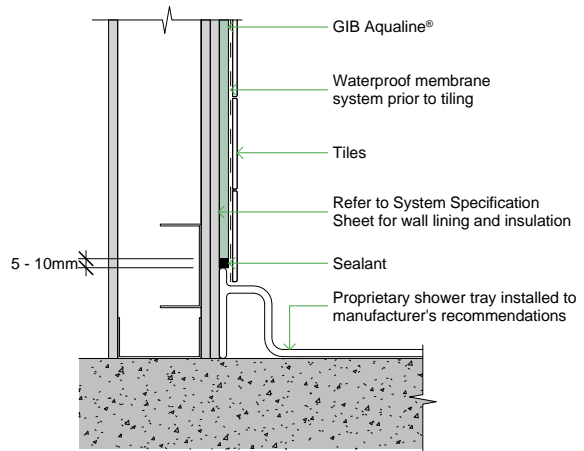


A: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION



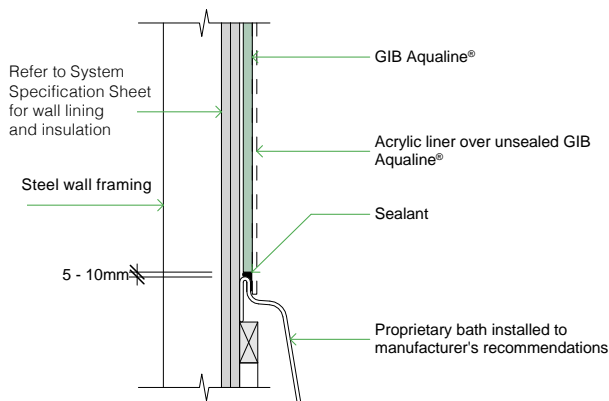
GAL-017

C: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION



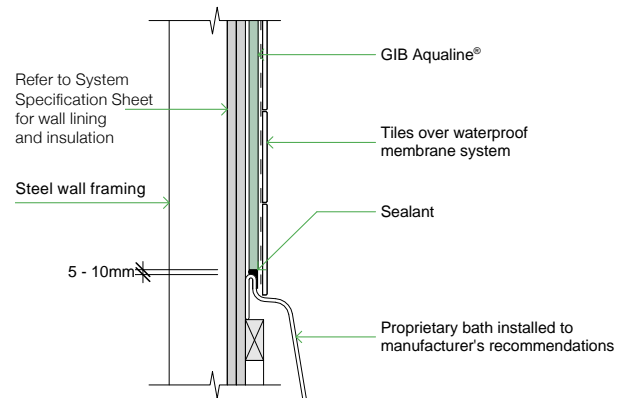
GAL-018

B: BATH DOUBLE LINING JUNCTION



GAL-013

D: BATH DOUBLE LINING JUNCTION



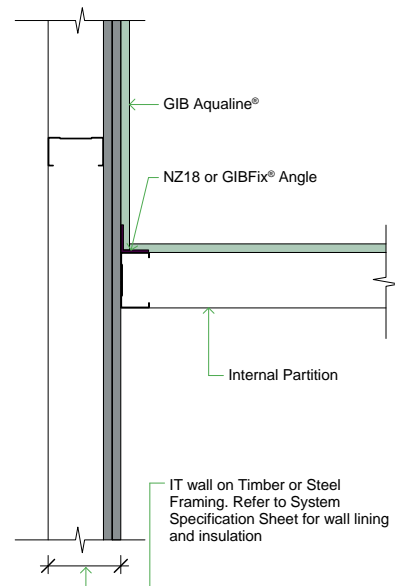
GAL-014

GIB® WET AREA SYSTEMS FIRE RESISTANCE AND NOISE CONTROL PERFORMANCE

Given recesses required for shower trays, bath upstands, etc., and the likelihood of renovations during the service life of the building, it is recommended that GIB® Wet Area linings in water splash areas are installed in addition to and over required fire and noise control systems in commercial or multi-residential applications.

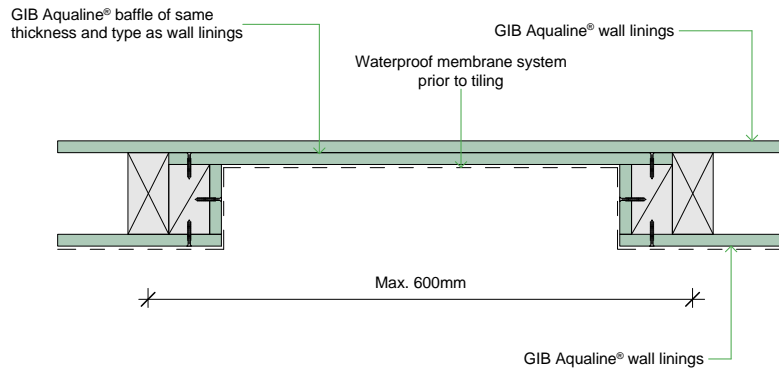
Do not tile on the resilient side of a GIB Rail® or Acoustic Resilient Mount (ST-001) and channel noise control system.

E: INTERTENANCY WALL AND WET AREA WALL JUNCTION

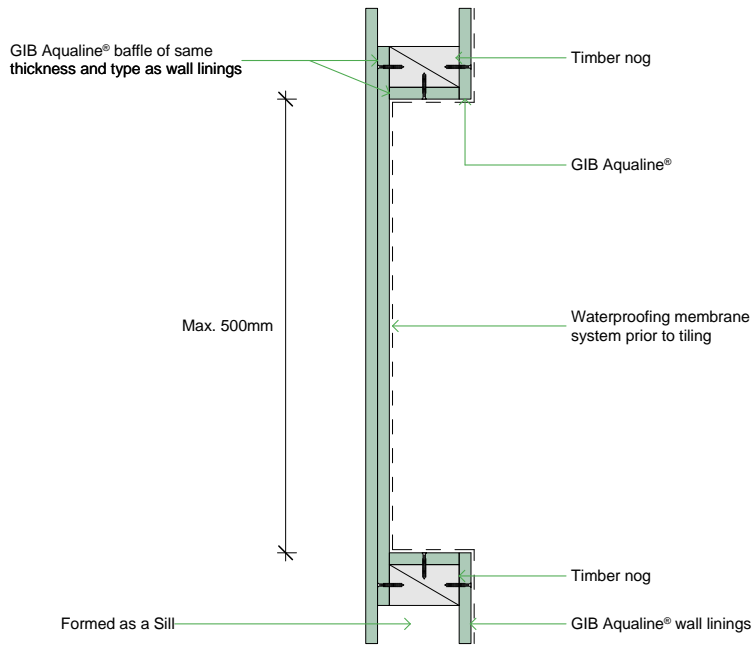


GAL-031C

TIMBER FRAME TILE RECESS

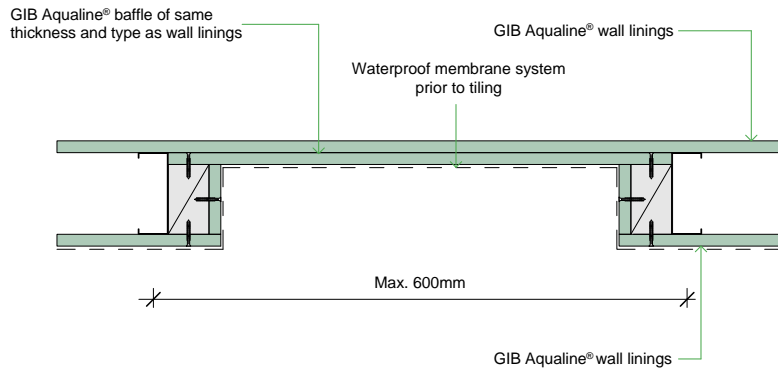


Larger recesses can be accommodated depending on specific framing layout provided 500mm is not exceeded in at least one direction.

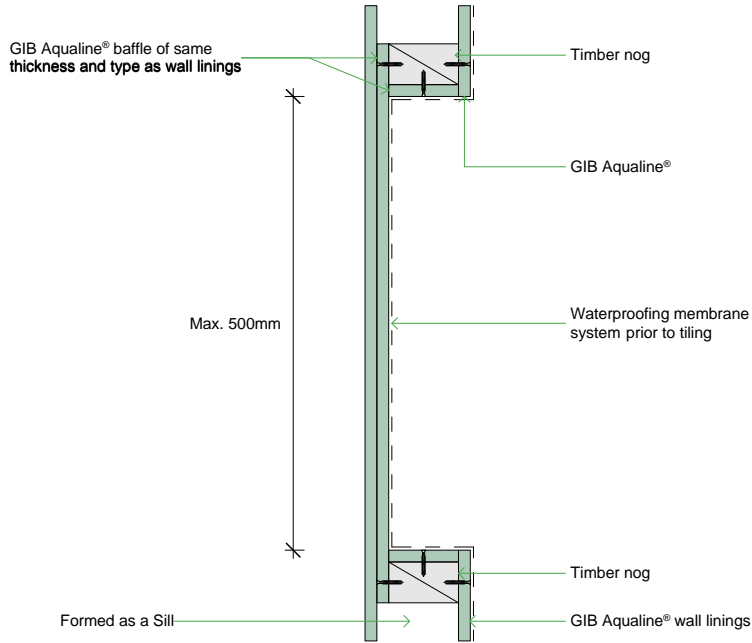


GAL-029B

STEEL FRAME TILE RECESS



Larger recesses can be accommodated depending on specific framing layout provided 500mm is not exceeded in at least one direction.



GAL-030

GIB® Wet Area Systems, February 2021

LIMITATIONS

Winstone Wallboards Ltd accepts no liability if the GIB® Wet Area Systems and junction details are not installed in strict accordance with instructions contained within this publication.

USE ONLY THE CURRENT SPECIFICATION

This publication may be superseded by a new publication. Winstone Wallboards accepts no liability for reliance upon publications that have been superseded. You should check the GIB® website to ensure you are using the current publication. If you are unsure whether this is the current publication, simply call the GIB® Helpline on 0800 100 442.

SUBSTITUTION

GIB® Wet Area Systems have been specifically designed and tested to achieve the stated performance levels. To maintain the GIB® Product and System Warranty, all system components detailed in this publication must be used when specifying and installing GIB® Wet Area Systems.

TRADEMARKS

The names GIB®, GIB Fyreline®, GIB Ultraline®, GIB Toughline®, GIB Braceline®, GIB Noiseline®, GIB Aqualine®, GIB Weatherline®, GIB Tradeset®, GIB Plus 4®, GIB-Cove®, GIB Lite Blue®, GIBFix®, GIB® Quiet Stud®, GIB Rail®, GIB Barrierline®, GIB X-Block®, GIB Fire Soundseal®, GIB Clip®, the colour mauve for GIB Toughline®, the colour blue for GIB Braceline®, GIB Noiseline®, the colour pink for GIB Fyreline®, the colour green for GIB Aqualine®, the colour purple for GIB Weatherline® and the shield device are registered trademarks of Fletcher Building Holdings Limited.

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gib.co.nz

OR CALL THE GIB® HELPLINE

0800 100 442



LPG Association Code of Practice
LPGA COP No 5

Installation and maintenance of LPG multi-cylinder systems

November 2019

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC240589 22/08/2024 Chrisk

LPG Association of New Zealand Inc
PO Box 1776
Wellington
New Zealand



Foreword

The performance of LPG cylinder installations is a critical element in ensuring that gas is supplied to appliances reliably and safely. This Code of Practice (Code) has been compiled with advice and input from across the industry in New Zealand and from international authorities.

The Code captures the latest knowledge and design features gained from operating experience and investigative work conducted by the LPG Association.

The purpose of this Code of Practice is to assist with:

- Locating cylinders correctly
- The reduction of phthalates from LPG systems
- The removal of condensate at the regulator
- The selection of suitable equipment and fittings
- Recommendations on equipment maintenance.

It should be read in conjunction with the requirements of the Health and Safety at Work (Hazardous Substances) Regulations, Pressure Equipment legislation, and AS/NZS 1596.

It is intended that gas fitters will use this Code as a best practice guide for the installation and maintenance of multi-cylinder installations.

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Section 1: Scope, Definitions and General

1.1 Scope

This Code of Practice sets out the requirements for installation and servicing of multi-cylinder LPG installations for both vapour and liquid withdrawal cylinders.

1.2 Definitions

For the purposes of this Code the following definitions apply:

Accessible:

Access can be gained without hazard or undue difficulty for repairs, testing, maintenance, renewal or operational purposes.

Area of regular habitation:

Includes any dwelling, hospital, school, airport, commercial premises, office or other area where people regularly congregate.

Authority:

Means WorkSafe New Zealand.

Automatic changeover regulator:

A combination valve/first-stage gas pressure regulator fitted to an LPG multi-cylinder installation that will automatically change over from a cylinder in use to a reserve cylinder at a predetermined pressure. It may be included in a one-piece automatic changeover valve assembly comprised of automatic changeover valve, first- and second-stage regulators and may incorporate pressure relief or over pressure shut off capability.

Breather vent:

An opening designed to permit atmospheric pressure to act on the diaphragm of a regulator.

Compliance Certifier:

A person who is authorised by WorkSafe New Zealand to issue compliance certificates.

Condensate:

The liquid that separates from the gas down stream of any regulator owing to the reduction in temperature resulting from pressure reduction.

Condensate trap (also known as a drip leg or tailpipe):

A device installed in a gas line to trap the condensate liquid.

Enclosure:

A compartment, an enclosed area or a partitioned-off space primarily used for the installing of a gas cylinder meter or gas pressure regulator.

Excess flow valve:

A normally open valve that closes automatically when a predetermined flow rate in a particular direction has been exceeded.

Gas fitting:

Has the same meaning as in the Plumbers, Gasfitters and Drainlayers Act 2006.

Gas installation:

A combination of the following used or intended to be used in the supply and utilisation of gas, taken as separate items or as a whole: consumer piping, fittings, components, appliances, flues, sub-meters, apparatus or other devices and associated equipment.

Gas load:

The total gas consumption of all downstream appliances.

Gas pressure regulator:

A device that automatically regulates the outlet pressure of the gas passing through it to a predetermined value.

Hazardous area: An area in which an explosive atmosphere is present or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of potential ignition sources.

HSW:

Health and Safety at Work Act 2015.

HSW HS:

Health and Safety at Work (Hazardous Substances) Regulations 2017.

Ignition source:

- (a) means any agency or agent (including any item, product, part of a facility structure or piece of equipment) capable of igniting a flammable gas, vapour or other form of combustible substance
- (b) includes a fire, flame or spark or anything capable of producing a fire, flame or spark.

LAB number:

Number allocated by WorkSafe New Zealand when a cylinder is approved.

Liquid withdrawal installation:

An installation where liquid LPG is used as the fuel supply.

Location compliance certificate:

A certificate (including a conditional compliance certificate) issued by a compliance certifier for a location.

Lock-up pressure:

The maximum pressure in an installation where the regulator has closed and when all appliances have shut down.

Multi-cylinder installation:

Means any installation greater than a twin cylinder installation.

Non return valve:

A valve designed to operate automatically to prevent reversal flow in a pipe or fitting.

Person in charge:

In relation to a place, a hazardous substance location or a place of work means a person who is the owner, lessee, sub-lessee, occupier or person in possession of the place, location or any part of it; or any other person who, at the relevant time, is in effective control or possession of the relevant part of the place or location.

Phthalates:

Plasticisers mainly DOP (Diocetyl Phthalates) predominantly found in rubber hose inner liners.

Pigtail:

A short length of flexible tube or copper pipe completed with end couplings. Used for connecting the cylinder to the manifold or the changeover valve.

POL fitting (Prest-O-Lite):

The common name given for a standard union with left hand thread, used for connection to a 45 kg cylinder.

Pressure:

As measured above atmospheric pressure, also called gauge pressure.

Protected Place:

- (a) Includes:
- (i) a dwelling, residential building, place of worship, public building, school or college, hospital, child care facility or theatre or any building or open area in which persons are accustomed to assemble in large numbers, whether within or outside the property boundary of a place where a hazardous substance is situated;
 - (ii) any factory, workshop, office, store, warehouse, shop or building where persons are regularly employed, whether within or outside the property boundary of a place where a hazardous substance location is situated;
 - (iii) a ship lying at a permanent berthing facility; and
 - (iv) a public railway.

(b) Does not include:

- (i) a small office or other building associated with a place where storage, handling, use manufacture or disposal of a class 2, 3, 4, 5, 6 or 8 substances is a major function.

Public Place:

- (a) Means a place (other than private property or a protected place) that is open to, and frequented by, the public; and
- (b) Includes a public road.

Relaxation Time:

A period of low or no LPG draw-off which allows a cylinder to recover vapour pressure and reach temperature equilibrium.

Residue:

A term given to multiple items that can build up in an LPG installation, this can include specks of rust from the LPG cylinders, installation equipment or extractible phthalates, which is the plasticiser found in some pigtailed that use a particular rubber inner liner.

Twin cylinder installation:

A cylinder installation where the cylinders are connected separately to the system. Each cylinder is connected to a changeover valve that can be operated manually or automatically, to change over the cylinder supplying LPG to the installation. Connection may be made using flexible rubber or copper pigtailed or pipe fittings.

Vapour withdrawal installation:

An installation where LPG vapour is used as the fuel supply.

WorkSafe:

WorkSafe New Zealand established by section 5 of the WorkSafe New Zealand Act 2013.

REFERENCED DOCUMENTS

HSW HS Regs	Health and Safety at Work (Hazardous Substances) Regulations 2017
PECPR	Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999
AS/NZS 5601.1	Gas Installations
AS/NZS 1596	The storage and handling of LP Gas
AS/NZS 1869	Hose and hose assemblies for liquefied petroleum gases (LP Gas), natural gas and towns gas
AS/NZS 60079	Classification of hazardous areas (series)
UL 21	LP Gas Hose

UL 144	Pressure-regulating valves for LP Gas
UL 252	Compressed gas regulators
AG 205	Regulators
NF M 88-769	1977 Commercial propane installations in movable containers coupling and Automatic changeover device - construction - operation – tests.

WEBSITES

LPGA	www.lpga.org.nz
Worksafe	www.worksafe.govt.nz

Section 2: Selection and Location Criteria Connections, Manifolds, Changeover Valves and Regulators

This section contains general guidelines that refer to all installations and where relevant each section will have specific requirements that apply to either vapour or liquid installations. Both the general and specific requirements must be used when selecting and building the installation.

Multi-cylinder installations shall be installed using a manifold to which all the cylinders are connected and using a single regulator (being either a single or dual-stage regulator), sized for the installation throughput.

2.1 Cylinders

- (a) All cylinders must comply with the requirements of Part 15 (Gases under pressure) of the Health and Safety at Work (Hazardous Substances) Regulations 2017.
- (b) Cylinders filled for use in LPG installations must be stamped with an LAB or LABSP number and a current test date.
- (c) Consideration should be given to ensure that the demand of the appliances to be connected to the system can be supplied by the cylinder installation.

As a guide on NZ LPG mix, a single 45 kg cylinder is capable of supplying a continuous duty cycle of 1 kg/hr or 50 MJ/hr for the duration of the LPG supply.

A single 90 kg cylinder is capable of a continuous supply of 1.6 kg/hr or 80 MJ/hr.

A single 222 kg cylinder is capable of a continuous supply of 2.4 kg/hr or 120 MJ/hr.

A larger instantaneous demand can be supplied for short periods, up to approximately 15 minutes, provided sufficient relaxation time is allowed following each high draw event so that the accumulated flow does not exceed the continuous draw-off rates over time.

2.2 Pigtails

Clause 4.3.3 of AS/NZS 1596

The following requirements apply to the piping in a cylinder installation:

- (a) The piping between a cylinder and a manifold or a first-stage regulator shall be either of the following:
 - (i) Annealed copper tube:
 - (A) complying with AS 1572;

- (B) having an alloy designation of 122 in accordance with AS 2738; and
- (C) with a minimum wall thickness of 1.22 mm and a nominal size of 6 mm

or 9 mm in industrial or commercial applications.

(ii) A flexible pigtail:

- (A) complying with AS/NZS 1869 class F;
- (B) having a maximum length of 600 mm;
- (C) having a nominal size of 6 mm or 9 mm in industrial or commercial applications; and
- (D) a non-metallic lined flexible pigtail, having a maximum life of 6 years from the date of manufacture.

- (b) The piping as specified in (a)(i) and (a)(ii) shall be as short as practicable and not more than 1 m in length.
- (c) The cylinder and piping shall be installed such that any liquid formed in the piping will drain freely back into the cylinder. Any such liquid shall not be allowed to drain back to the regulator.

Notes:

1. An excess flow valve may be an integral part of the POL fitting
2. For joining methods and materials, see Table 4.1 AS/NZS 5601.1.

Liquid specific

- (a) Liquid withdrawal systems shall be designed by a suitably competent person in consultation with the LPG supplier.
- (b) An AS 2473 type 26 CGA555 valve system shall be used.
- (c) For exchange cylinder installations a valve should be fitted at the cylinder end of each cylinder hose and a hydrostatic relief valve installed in any section of the pipe where liquid could be trapped between valves.
- (d) Liquid installations should have manufacturer approved liquid hoses.
- (e) All valves and hoses must be suitably rated for liquid, ie, typically 2.4 MPa.

2.3 Changeover valves

Changeover valves can be manual or automatic and may include a non-return valve on each pigtail connection. The valve must comply with the requirements of WorkSafe New Zealand.

Changeover valves may be comprised of a first- and second-stage regulator system in a single body or as a combination of separate components.

2.4 Regulators

- (a) Regulators and automatic changeover devices must comply with either:
 - (i) ASA621-2004
 - (ii) UL 144:2002
 - (iii) UL 252
 - (iv) BS EN 16129: 2013
 - (v) A relevant safe work instrument that specifies standards for LPG regulators or automatic changeover devices.
- (b) Only those regulators that are listed on Worksafe New Zealand's register of gas fittings can be used.
- (c) Consideration must be given to the total expected gas load when sizing the regulator.
- (d) A single-stage regulator or the first stage of a multi-stage regulator shall be located so that the length of the piping subject to cylinder pressure is as short as practicable.

2.5 Condensate trap

- (a) Condensate traps remove condensate and prevent transfer down stream of most condensates present in the LPG.
- (b) A condensate trap should be installed between the first- and second-stage regulator if they are separate items.
- (c) If the regulator is the combined type, then a condensate trap should be installed immediately after the regulator.
- (d) Condensate traps must have a vertical limb in a direct line to the first-stage regulator and be of a minimum volume of $V=N \times 5.5$
 - (i) where: V = The volume of the vertical limb in Millilitres (ml)
 - (ii) N = The number of 45 kg cylinders.
- (e) The trap must have a plug or other means of removing the condensate.

Examples of length of condensate trap tube for 10 and 13 mm pipe and various numbers of cylinders.

Number of 45 kg cylinders	Length 10 mm pipe	Length 13 mm pipe
Two	140 mm	88 mm
Four	280 mm	180 mm
Six	370 mm	240 mm
Eight	560 mm	350 mm

2.6 Non-return valves – vapour withdrawal system only

- (a) A non-return valve shall be fitted either in each pigtail connection of the changeover valve or as part of each pigtail.
- (b) The non-return valve is to ensure that LPG cannot flow across the changeover system.

2.7 Excess flow valves

- (a) An appropriately sized excess flow valve must be fitted to ensure that in the event of a pipe or hose failure the flow is restricted.
- (b) The excess flow valve can be an integral part of the pigtail assembly or immediately after the outlet of each cylinder valve or be internal to the cylinder.

2.8 Manifolds

- (a) Proprietary manifold systems must be approved by WorkSafe New Zealand.
- (b) One-off systems using the POL tee system instead of a manifold shall be restricted to connecting a maximum of four cylinders per side.
- (c) One-off manifold systems require a producer statement confirming compliance with the requirements of the PECPR regulations.
- (d) Manifolds shall be installed so that any liquid formed in the piping will drain freely back into the cylinder. Any such liquid shall not be allowed to drain back to the regulator.
- (e) For Liquid withdrawal systems A pressure relief valve shall be installed on the manifold between any valves that can isolate sections of pipework.

Note: For liquid withdrawal systems the gas supplier should be consulted as it may have additional requirements for the installation.

2.9 Materials of construction

The following is taken from clause 5.6 of AS/NZS 1596:

2.9.1 Design for pressure

Piping that operates at a pressure of less than 200 kPa shall comply with AS/NZS 5601.1 or AS/NZS 4645.1.

Piping for use at a pressure exceeding 200 kPa shall comply with AS 4041, or other equivalent design Standard, with the following qualifications:

- (a) The design pressure shall be not less than that of the cylinder, the tank or the pump delivery pressure, or hydrostatic relief valve pressure, whichever is the greater
- (b) The design shall allow for expansion and contraction, both of the piping itself and of any equipment to which it is connected
- (c) Screwed pipe shall be at least ASME B31.3 Schedule 80
Welded pipe shall be at least ASME B31.3 Schedule 40
- (d) Copper pipe or tube shall not be used where the temperature is expected to exceed 120°C, or for liquid lines exceeding 10 mm in diameter or 2 m in length.

2.9.2 Joints

A joint in rigid pipework that is subject to tank pressure shall be welded, screwed taper-to-taper, flanged, or made with a ground-face union, provided that the following apply:

- (a) Where the nominal bore of the pipe exceeds 50 mm, screwed joints shall not be used unless unavoidable, eg, for the mounting of essential auxiliary equipment having screwed connections
- (b) Pipe jointing compounds and gaskets shall be suitable for use with LP Gas
- (c) Spiral wound metal gaskets with a minimum temperature rating of 550°C shall be used for flanged connections on liquid phase piping
- (d) Compressed fibrous gaskets or O-rings shall only be used on encapsulated flanges where it is impracticable to use spiral-wound gaskets
- (e) Multiple gaskets shall not be used at any flanged joint
- (f) Joints intended to be buried shall be welded.

In New Zealand, welders shall be qualified to ANSI/API 1104 or ASME Boiler and Pressure Vessel Code, Part IX.

2.9.2.1 Joints in copper pipe

A joint in copper piping shall be made:

- (a) with a flare compression fitting; or

- (b) with a capillary fitting using a brazing metal with a melting point not less than 540°C; or
- (c) by a spigot joint formed from the pipe itself and brazed as above.

Flare fittings having mismatching cone angles, or olive or similar compression-sleeve type fittings, shall not be used.

2.9.2.2 Flexible pipe connections

A flexible pipe connection may be used where necessary to absorb vibration, or where a rigid connection is impracticable. Such a connection shall comply with the following requirements:

- (a) Individual or combined lengths shall be as short as practicable
- (b) A flexible connection shall be of metal construction, designed for a bursting pressure not less than 12 MPa and tested to not less than 3.6 MPa.

2.10 Certification for pressure pipework

Pipework that has an internal diameter 40 mm or less is not required to have a certificate of inspection under the PECPR regulations. However, records must be held to demonstrate compliance with the PECPR requirements. Pipe work that has an internal diameter of greater than 40 mm must have a certificate of inspection under the PECPR Regulations.

2.11 Identification

Piping shall be identified according to its contents.

2.12 Corrosion protection

Steel pipe and fittings shall be painted to protect against corrosion.

2.13 Sizing the installation

Piping shall be sufficient size that the operation of appliances shall not be affected by the pressure drop in any pipe.

The volume of gas accounted for shall be determined from either, the manufacturer's input rating, gas supplier or equipment manufacturer.

The total connected hourly load shall be the basis for storage and pipe sizing for all equipment that may be operating at full capacity simultaneously.

2.14 Commissioning/pressure testing of the manifold

The installation should be pressure tested up to the first-stage regulator by the gasfitter prior to delivery of the cylinders. Following delivery, purging and commissioning should take place.

Section 3: Location of Cylinders

3.1 General

Cylinders and associated equipment should not be installed indoors unless specifically permitted in table 10 of schedule 12 of the HSW HS Regulations.

3.2 Prohibited locations

Clause 4.4.3 of AS/NZS 1596.

Any cylinder and its associated equipment should not be installed in any of the following locations:

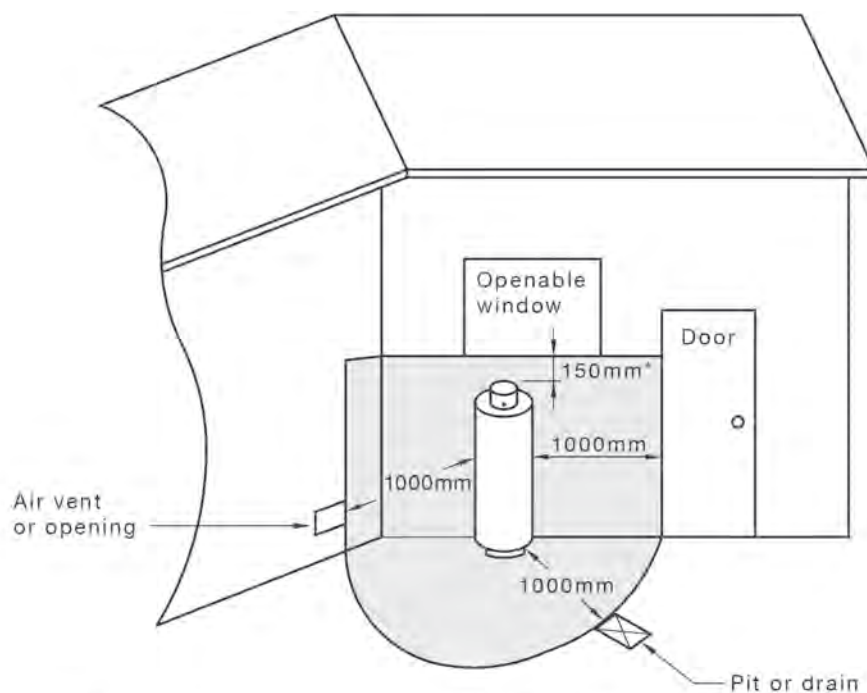
- (a) Within a building, except where permitted. Under table 10. Of schedule 12 of the HSWA HS Regulations.
- (b) Under a stairway.
- (c) In a location with restricted access, where inspection, refilling or exchange of the cylinder is restricted, obscured or hazardous to the operator.
- (d) Where nearby constructions, fences, walls or vapour barriers could prevent cross ventilation.
- (e) Under a building, except where permitted by this Code.
- (f) Where the cylinder, or an incident involving the cylinder and its contents, could obstruct egress from a building.
- (g) Buried in the ground, unless the cylinder and gas installation have been specifically designed for such a location.
- (h) Any cylinder and its associated equipment should not be installed where damage is likely to occur, unless adequate protection is provided.

3.3 Clearances around cylinders

Separation distances for LPG cylinders shall comply with the relevant HS Regulations and:

- (a) Up to 100 kg can be installed within one metre of a building (up against the wall) provided there are no openings in the building below the top of the cylinders and within one metre of the cylinders.
- (b) Cylinders should not be located within 1 metre of an opening to a drain, this is to prevent any gas leakage from entering the drain.
- (c) Where the cylinders are located within 1 metre of a building, there must be no openings into the building below the top of any cylinder or within 1 metre of any cylinder. NOTE: Weep holes are not considered openings into the building for the purposes of this Clause.

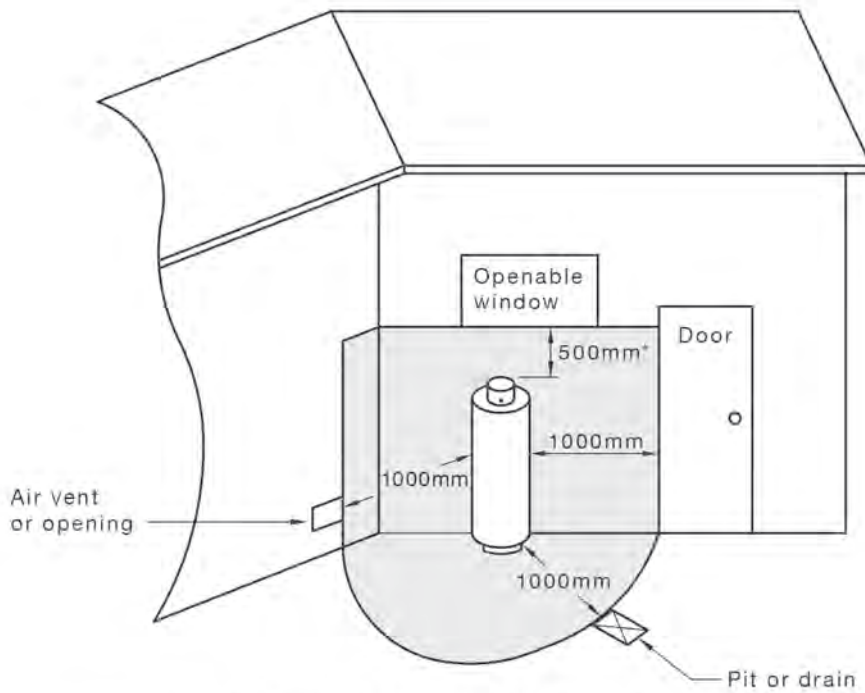
- (d) Where a cylinder is installed beneath a window, the distance between the top of any cylinder valve and the bottom of the window's opening shall be at least 150 mm for exchange cylinders and 500 mm for on-site filled cylinders.
- (e) Between 100 to 300 kg can be installed within 2 metres of a building (up against the wall) provided the walls of the building behind the cylinders and 2 metres either side of the cylinders are vapour tight and constructed of fire-resisting material. There must be no openings in the building below the top of the cylinders or within two metres from the sides of the cylinders.
- (f) Between 300 to 1,000 kg can be installed within two metres of a building (up against the wall) provided the walls of the building behind the cylinders and 2 metres either side of the cylinders are vapour tight and are constructed of 60/60/60 fire-resisting material. There must be no openings in the building below the top of the cylinders or within two metres from the sides of the cylinders.
- (g) There is a minimum vertical clearance from openings into buildings of 150 mm above the top of any cylinder. This clearance increases to 500 mm for in-situ filled cylinders.
- (h) If the fire-resisting material or fire-rated wall cannot be provided or if the quantity is in excess of those above the separation distances from Table1 must be used.



* This distance is measured from the top of any cylinder valve

NOTE: In New Zealand, if the quantity of LP Gas totals 100 kg or more, the separation distance to openings into buildings increases to 2 m.

FIGURE 4.2 EXCHANGE CYLINDER LOCATION



* This distance is measured from the top of any cylinder valve

NOTE: In New Zealand, if the quantity of LP Gas totals 100 kg or more, the separation distance to openings into buildings increases to 2 m.

FIGURE 4.3 IN SITU FILL CYLINDER LOCATION

Quantity (kg)	Protected place (m)	Public place (m)
Up to 100	0	0
300	2	0
500	2	2
1,000	2.5	2
2,000	3	2
5,000	5	3

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3.4 Cylinders on a verandah

Clause 4.4.7 of AS/NZS 1596.

Where cylinders are located on a verandah, the following recommendations apply:

- (a) The location should be nominally at ground level
- (b) The verandah should be open on all three sides
- (c) The hazardous area around the cylinders should be free of fixed ignition sources

- (d) The cylinders should not be subject to physical damage, heat or vibration
- (e) A maximum of 90 kg should be kept on a verandah.

3.5 Cylinders in an enclosure or recess

Clause 4.4.10 of AS/NZS 1596

Where a cylinder is to be installed in an *enclosure* or recess, the enclosure or recess should be designed to:

- (a) house cylinders and their associated equipment only;
- (b) allow free unimpeded discharge from each cylinder safety valve;
- (c) ensure that water will not accumulate on the base; and
- (d) ensure the cylinder and its associated equipment are clear of the surrounding soil.

Enclosures of sheet metal or similar impervious construction should have ventilation openings at the top and bottom, with each opening providing a free area of at least 20 000 mm² for every cylinder enclosed.

3.6 Cylinders under buildings

Clause 4.4.8 of AS/NZS 1596

Where a cylinder is located under a building supported by piers, the following recommendations apply:

- (a) There should be a vertical clearance of at least 800 mm between the top of the neck ring of the cylinder and the underside of any overhanging part of the building.
- (b) No part of the cylinder should be more than 800 mm within the perimeter of the building's walls.
- (c) The area between the piers should be
 - (i) open on at least three sides; or
 - (ii) enclosed by a construction through which cross ventilation can occur (eg, slats or battens) on at least three sides; or
 - (iii) a combination of Items (i) and (ii) above.

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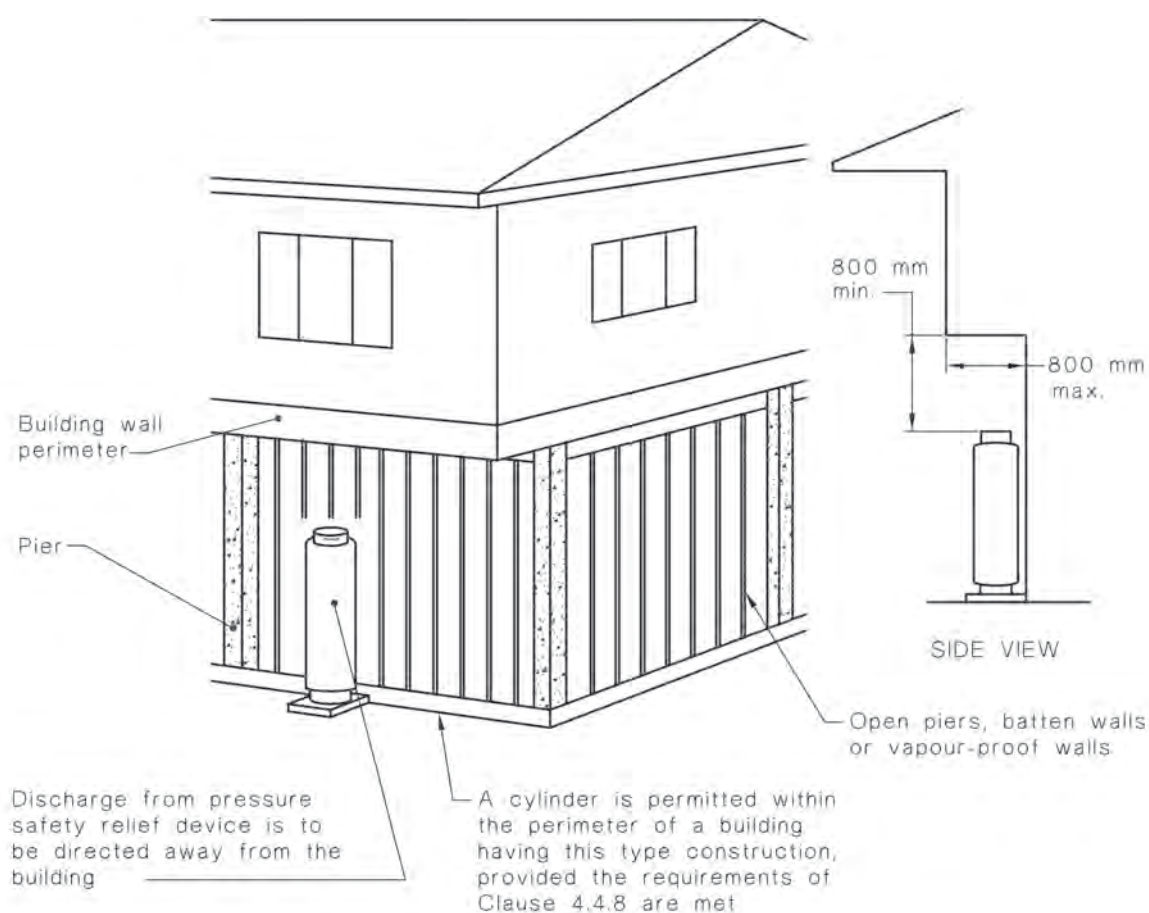


FIGURE 4.5 LOCATION OF CYLINDER UNDER A BUILDING

3.7 Requirements for cylinder deliveries

Cylinder installations should be located such that the delivery of gas can be made safely by one person without excessive manual handling or risk to a customer's property. In situations where the following conditions cannot be satisfied, other options such as locating the cylinders remotely and piping to the installation should be considered.

- (a) Cylinder installation must be designed to be capable of accommodating the size of cylinder intended for use, for either exchange or insitu fill applications.
- (b) A minimum distance of 600 mm should be provided between the front of the cylinder installation and other structures to allow adequate access for the cylinder delivery to be made.
- (c) The cylinder compound should be accessible by cylinder trolley.
- (d) Paths should have a minimum width of 600 mm.
- (e) Steps should have a minimum of 2:1 tread depth to tread rise. Maximum tread rise should be 125 mm.
- (f) Steps should not exceed 1.5 m total rise.

- (g) Paths should not exceed 20 degree gradients.
- (h) Total distance from cylinder delivery truck parking area and cylinder installation should not exceed 75 m.
- (i) It must be possible to legally and safely park the truck while making the delivery.
- (j) Access route should be firm and compact with adequate grip even in wet conditions.
- (k) The access route should not be over delicate or decorative surfaces, such as terracotta.

Section 4: Cylinder Installation

4.1 Installing cylinders

From clause 4.4.11 of AS/NZS 1596

Cylinders should be installed in accordance with the following recommendations:

- (a) Cylinders should be installed on a firm, level, non-combustible base and not resting on soil. The floor or base should be constructed so that water cannot accumulate within any enclosure or recess.
- (b) Cylinders should not be stacked on top of each other.
- (c) Any cylinder that is liable to accidental dislodgment should be prevented from falling.
- (d) Except for domestic installations, where there are maneuvering vehicles, cylinders should be afforded suitable protection, eg, by the use of bollards, or a fully contained, free-moving frame that encapsulates all cylinder components.
- (e) Cylinders should not be installed below ground level unless there is sufficient ventilation to prevent the accumulation of any leaking gas.
- (f) A cylinder intended to be exchanged or removable should be connected to a fixed piping system.
- (g) Vapour-service cylinders should be installed so that the point of LPG withdrawal is in contact with the vapour space.
- (h) Where two or more exchange cylinders are connected for use, a means should be provided to permit the cylinders to be isolated from the gas supply, to allow the cylinders to be disconnected. This should be achieved by either of the following:
 - (i) A manual or automatic changeover valve installed immediately upstream of the regulator serving the system; and

Note: Such a valve may be an integral part of an automatic changeover regulator.

- (i) Isolation valves should be installed on the manifold, to allow each cylinder to be individually disconnected from the manifold without depressurising the manifold.

4.2 Cylinder safety valve discharge

A cylinder should be installed so that the pressure-relief valve is in contact with the vapour space and, where practicable, any discharge from this valve is directed away from any adjacent cylinders or combustible structures.

4.3 Regulators

Clauses 4.3.1 and 4.3.2 of AS/NZS 1596

Regulators shall comply with the following requirements:

- (a) The cylinder regulator shall be fixed rigidly to an adequate support that is independent of the cylinder and mounted with the diaphragm vertical and the vent pointing vertically downwards.
- (b) For cylinders exceeding 400 L that are fitted with lockable domes, the regulator should be connected directly (or as close as fittings will practically allow) to the cylinder valve outlet.
- (c) Gas pressure regulators shall be located to permit drainage of any liquid back into the cylinder.
- (d) Any first stage regulator shall be outdoors, except where the regulator is attached to a cylinder that is permitted to be used indoors.
- (e) Second stage regulators shall be installed in accordance with AS/NZS 5601.1
- (f) A single-stage regulator or the first stage of a multi-stage regulator shall be located so that the length of the piping that is subject to cylinder pressure is as short as practicable.
- (g) The outdoor discharge from a vent terminal, gas-pressure-relief device or terminal of a vent line shall be:
 - (i) arranged to minimise the risk of vapour collecting in drains, gutters and downpipes;
 - (ii) not less than 0.5 m in any direction from any opening into a building; and
 - (iii) not less than 0.5 m below and 1 m laterally from any fixed source of ignition.
- (h) The vent terminal shall have provision to exclude rain and insects.

4.4 Piping

Clause 4.3.3 of AS/NZS 1596

The following requirements apply to the piping in a cylinder installation:

- (a) The piping between a cylinder and a manifold or a first-stage regulator shall be either of the following:
 - (i) Annealed copper tube:
 - (A) complying with AS 1572;
 - (B) having an alloy designation of 122 in accordance with AS 2738; and
 - (C) with a minimum wall thickness of 1.22 mm and a nominal size of 6 mm or 9 mm in industrial or commercial applications.
 - (ii) A flexible pigtail:
 - (A) complying with AS/NZS 1869 class F;
 - (B) having a maximum length of 600 mm;
 - (C) having a nominal size of 6 mm or 9 mm in industrial or commercial applications; and
 - (D) for a non-metallic lined flexible pigtail, having a maximum life of 6 years from the date of manufacture.
- (b) The piping as specified in Items (a)(i) and (a)(ii) shall be as short as practicable and not more than 1 m in length
- (c) The cylinder and piping shall be installed such that any liquid formed in the piping will drain freely back into the cylinder. Any such liquid shall not be allowed to drain back to the regulator.

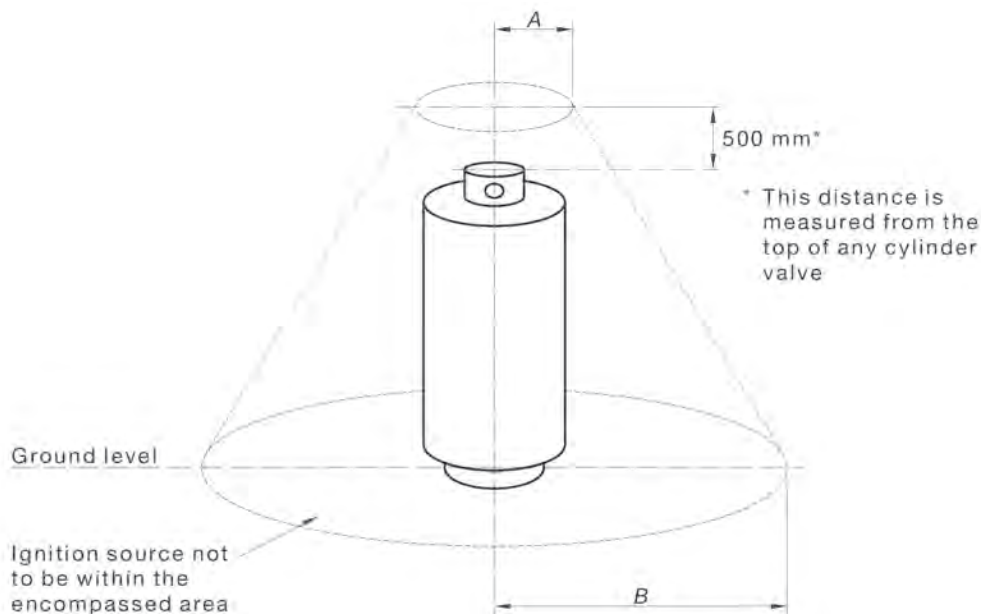
4.5 Meters

- (a) Meters shall be installed in readily accessible locations where they are protected from damage and which permit ease of replacement, maintenance and reading, and shall be clearly identified with the gas installation they supply.
- (b) Possible causes of damage include impact, corrosion, thermal extremes, excessive vibration, steam and dampness.
- (c) A recess or box in a cavity wall for housing a meter shall be:
 - (i) constructed of non-combustible material;
 - (ii) completely sealed from any adjoining recess or cavity;
 - (ii) adequately sized to permit ease of replacement or maintenance of the meter; and
 - (iv) ventilated to the outside atmosphere.

4.6 Hazardous area requirements

Clause 4.4.6 of AS/NZS 1596

- (a) The hazardous zone surrounding a gas cylinder, as specified in AS/NZS 60079.10.1, shall be maintained free of ignition sources, this includes heat pumps, earthing rods and any communication wiring.
- (b) For exchange cylinders there is a zone 2 area within the space 0.5 m above and 0.5 m laterally from any cylinder valve, extending to a distance of 1.5 m laterally at the base of the cylinder.
- (c) For on-site filled cylinders there is a zone 2 area within the space 0.5 m above and 1.5 m laterally from any cylinder valve, extending to a distance of 3.5 m laterally at the base of the cylinder.



Radius	Exchange cylinder mm	In-situ fill cylinder mm
A	500	1500
B	1500	3500

FIGURE J3 MINIMUM CLEARANCE TO IGNITION SOURCES

4.7 Restraint

- (a) All cylinders larger than 25 litres (9 kg) shall be secured against seismic activity by using chains and brackets or similar. Cylinders greater than 200 litres (90 kg) are typically inherently stable.
- (b) The brackets shall be fastened to a wall or similar robust anchorage.

4.8 Security of cylinders in public locations

From Clause 4.4.10 of AS/NZS 1596

Where a cylinder exceeding 12 litres capacity is permanently installed for public use in a location having unrestricted public access, the following recommendations should apply:

- (a) Either:
 - (i) The cylinder and any associated regulator should be enclosed in a lockable cage or cabinet ventilated at the top and bottom; or
 - (ii) The cylinder valves and regulator should be guarded by a covering metal hood and the cylinder protected against accidental dislodgement.
- (b) The connecting piping should be arranged so that it is not vulnerable to tampering or accidental impact.

Any lockable enclosure as described in items (a)(i) and (ii) should be kept locked when not in use.

These requirements do not apply to cylinders on caravans or mobile homes or to cylinders attached to any cabins for hire or domestic dwelling associated with the site.

4.9 On-site filled cylinders

- (a) The cylinders must be located outside of any building.
- (b) The cylinders should be located where there will be direct line of sight between the road tanker and cylinders.
- (c) The cylinders should be located so that any delivery hose does not pass through any buildings or cross any carriageways, unless the building is an open carport or verandah.
- (d) The cylinders are installed on a stable non-combustible base that is raised above the surrounding area and sheds water.
- (e) The cylinders are restrained (for example, chained) against seismic movement.
- (f) Any opening into a building is not located within 500 mm above the cylinders.
- (g) Any opening into a building or pit is not located:
 - (i) within 1 m measured horizontally from the cylinders holding 100 kg or less of LPG; and
 - (ii) within 2 m measured horizontally from the cylinders holding more than 100 kg of LPG
- (h) Any opening into a drain is not located within 1 m measured horizontally from the cylinder.

4.10 Vapourisers

- (a) This is a specialist field and the gas supplier shall be consulted.
- (b) Direct fired vapourisers, ie, those with a source of ignition, must be separated from the cylinder storage as required by the HSW HS legislation. Specialist advice must be obtained from the gas supplier for these requirements.
- (c) Non-direct fired vapourisers can be installed in the cylinder storage area following advice from the gas supplier.

4.11 Test points

Sufficient test points must be provided to carry out the following tests on the installation:

- (a) A pipework test on the newly installed pipework before any gas appliances are connected
- (b) An installation test, including all gas appliances, prior to connection of the gas supply
- (c) A final connection test.

4.12 Location compliance certificates

- (a) A location compliance certificate is required for all sites where 100 kg or more LPG is present for more than 24 hours.
- (b) It is usually the responsibility of the PCBU in charge of the site where the cylinders are to be installed to obtain the location compliance certificate. These are renewed annually although there is provision for a certificate to be issued for up to a three-year period (where up to 300 kg is being stored). This is dependent on the compliance certifier.
- (c) For non-workplace sites with up to 300 kg, a plaque must be installed on the installation by the gas supplier to indicate that the installation is compliant.
- (d) A location test certificate can only be obtained from a compliance certifier. A list of compliance certifiers is available of the Worksafe New Zealand website: <http://www.worksafe.govt.nz>.

4.13 Signage

HS signage is required on all installations storing 250 kg or more.

Signage details can be obtained from the gas supplier.

4.14 Emergency response

1. A 2 kg dry chemical fire extinguisher is required to be available for all installations over 50 kg. The location of the extinguisher must be clearly visible and readily accessible in an emergency.

Note: Fire extinguishers are not a requirement for residential property.

2. Emergency response plans are required for all sites with 300 kg in one location. The gas supplier or a compliance certifier should be contacted for this information. A generic emergency plan is available from Worksafe New Zealand's website.

4.15 Modifications

1. All modifications must comply with the requirements of this Code.

Section 5: Maintenance LPG Cylinder Installations

5.1 Cylinders

Cylinders should not be filled unless they have been tested and certified within the last 10 years.

5.2 Flexible pigtails manufactured to AS/NZS 1869

- (a) Pigtails should be inspected visually for cracks and deterioration every time the cylinder is exchanged or filled.
- (b) Pigtail connections should be checked with a soapy solution every time the cylinder is changed or filled.
- (c) Pigtails should be replaced six years from the date of manufacture.

5.3 Changeover valves

Changeover valves should be checked for correct operation in accordance with manufacturer's recommendations or in the absence of any recommendations, at least every 10 years.

5.4 First-stage regulators

- (a) The first-stage regulator to be checked for correct operation in accordance with the manufacturer's recommendations or in the absence of any recommendations at least every 10 years.
- (b) The condensate trap to be drained by removing the drain plug provided at intervals not exceeding two years and at every visit of the gas fitter.

5.5 Second-stage regulators

The second-stage regulator to be checked for correct operation in accordance with the manufacturer's recommendations or in the absence of any recommendations, at least every 10 years. The rubber diaphragm and rubber seal must be inspected for deterioration and replaced if necessary.

5.6 Condensate traps

Condensate traps should be emptied whenever any work is carried out on the installation and at least every 2 years.

Note: For the quantities of residue expected to be found in the condensate traps, between 2 to 3 ml maximum, use disposable gloves when emptying the residue into absorbent material. This absorbent material and the gloves can then be disposed of in general waste.

MASONS BARRICADE FR HOUSE WRAP

DESIGN AND INSTALLATION GUIDE



MASONS
Designed Smart, Built Tough.

V1.0 June 2022

General and product information

PURPOSE

This design and installation guide relates to Masons Barricade FR.

IMPORTANT DOCUMENTS

This guide must be read in conjunction with:

- › Masons Barricade FR Codemark
- › Masons Barricade FR Warranty
- › Masons Barricade FR Material Safety Data Sheet.

SKILLS REQUIRED

This guide is suitable for use by a competent designer and person with basic carpentry skills. Where applicable the person specifying, supervising or installing the Masons Barricade FR must be able to meet all RBW provisions.

FOR MORE HELP

Technical assistance is available at www.mpb.co.nz.

While all reasonable efforts have been made to ensure the accuracy of information provided, this guide is a guide only. It may be subject to change.

FOR OUR WARRANTY

Refer to www.mpb.co.nz.

PRODUCT DESCRIPTION

Barricade FR is a flammability-rated synthetic breather-type flexible wall underlay and air barrier. It is manufactured from spun-bonded polypropylene and is coloured white and is available in 2.73m, 1.37m and 0.6m wide rolls.

SCOPE AND LIMITATIONS

For scope of use, limitations, conditions and statement of building code compliance, refer to the Masons Barricade FR Codemark.

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC240589 22/08/2024 ChrisK



Design

STEP 1: CONFIRM SCOPE

Confirm the proposed use is within the scope and limitations of the Codemark.

STEP 2: CONFIRM RELATED BUILDING WORK

Masons Barricade FR is suitable for use with a timber or steel framed structure. For new and existing buildings confirm that the primary structure:

- › complies with the NZ Building Code and is designed in accordance with NZS 3604:2011 or NASH Design Standard 2019 Parts 1 and 2; or
- › is specifically designed to NZS 3603:1993 or AS/NZS 1170:2002; or
- › where existing, is suitable for the intended building work.

Masons Barricade FR is an exterior wall underlay and air barrier for timber and light-steel framed buildings.

STEP 3: SPECIFY ANCILLARY PRODUCTS

Ensure all required ancillary products are specified in the completed Masons Barricade FR specification.

STEP 4: QUALITY CHECK

Confirm all relevant design requirements are met.

Collate the following documents and include in the building consent application:

- › Masons Barricade FR Codemark,
- › Masons Barricade FR Material Safety Data Sheet,
- › Masons Barricade FR Warranty and
- › this document.

Pre-installation

HEALTH AND SAFETY

Take all necessary steps to ensure your safety and the safety of others:

- › ensure adequate ventilation or mechanical dust extraction when cutting or drilling
- › take care when fixing the wrap in windy conditions
- › wear appropriate safety equipment, clothing and footwear
- › use all tools in accordance with relevant instruction manuals
- › plan and monitor a safe approach for working at height; select and use the right equipment
- › clear the work area of any obstruction before work starts.

For further information refer to:

- › WorkSafe. [July 2018] Small Construction Sites, the Absolutely Essential Health and Safety Toolkit.
- › WorkSafe. [December 2016] Health and Safety at Work, Quick Reference Guide.

These documents are available at www.worksafe.govt.nz.



HANDLING AND STORAGE

Handling

Care must be taken during loading, unloading, and transporting the materials to prevent pre-installation damage.

Unload the rolls carefully by hand. Do not crush the rolls and ensure they are protected from damage.

Storage

Store the rolls on end under a cover, in a clean and dry area and out of direct sunlight.

TOOLS AND EQUIPMENT REQUIRED

Install Masons Barricade FR using standard carpentry tools and equipment. Use tools in accordance with good trade practice and supplier's instructions.

Installation

STEP 1: BUILDING CONSENT DOCUMENTATION

Where applicable, access and view building consent documentation.

STEP 2: CHECK RELATED BUILDING WORK

For new and existing buildings ensure the primary structure is straight and true and within framing tolerances as described in Table 2.1, section 2 of NZS 3604:2011.

Masons Barricade FR can be used where cladding is installed over a cavity system or direct fixed cladding.

STEP 3: INSTALL WRAP

For assistance in installing Barricade FR call 0800 522 533 to be put in touch with your Masons Rep.

Fit Wrap

Ensure all necessary equipment and ancillary components are available.

Masons Barricade FR must be fixed (with the printed side out) to all framing members at maximum 300 mm centres with large-head clouts 20 mm long, 8 mm minimum staples, self drilling screws or proprietary underlay fixings. The membrane must be pulled taut over the framing before fixing.

Fixing

Masons Building Wrap must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs.

Horizontal laps must be no less than 75 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.



The wall underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the membrane by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut membrane must be folded inside the opening and stapled to the penetration framing. Excess underlay may be cut off flush with the internal face of the wall frame. Masons Hydro™ or 40 Below™ Flashing Tape needs to be installed around the openings prior to fitting the doors and windows.

Masons Building Wrap must be restrained from bulging into the drained cavity in accordance with NZBC Acceptable Solution E2/ AS1, Paragraph 9.1.8.5. Installing Masons WrapStrap - horizontal at 300mm centres - prevents the wrap and insulation from bulging.

Masons Building Wrap can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.7(e).

When fixing the product in windy conditions, care must be taken due to the large sail area created by wide roll widths.

Tears

Any damaged areas of Masons Building Wrap, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears with Masons Hydro™ or 40 Below™ Flashing Tape.

Provided Masons Wrap is not exposed to the weather or ultra-violet light for a total of more than 60 days, and provided the exterior cladding is maintained in accordance with the manufacturers instructions and the cladding remains weather resistant, the wrap is expected to have a serviceable life equal to that of the cladding.

STEP 4: QUALITY CHECK

Ensure that all joins are taped, and all tears have been repaired. Ensure full adhesion around penetrations and openings.

Ensure Mason's warranty is inserted into the client document package.

MASONS PLASTABRICK
MATERIAL SAFETY
DATA SHEET



MASONS
 Designed Smart, Built Tough.

V1.0 September 2021



SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Products	Mason Plastabrick Building Flexible Air Barriers: UNI, UNI Pro Barricade FR, UNI Barricade Soffit, UNI FR, UNI FR Soffit, VHP Strong, VHP Ultra, VHP Maxi
Description	Three layer comprising spunbond nonwoven polypropylene (PP) - breathable film (PP/PE), PP grid (optional) - spunbond nonwoven polypropylene PP
Use	As a flexible building wrap
Supplier	Masons Plastabrick
Address	18a David McCathie Place, Silverdale, Auckland 09322
Phone number	0800 522 533
Address e-mail	info@mpb.co.nz
Emergency contact	National Poison Centre 0800 764 766

SECTION 2: HAZARDS IDENTIFICATION

Emergency Overview	The product is not considered hazardous.
Route of Exposure-Skin	Unlikely to be an irritant. Any irritation likely to be caused mechanically.
Route of Exposure-Eye	Unlikely to be an irritant. Any irritation likely to be caused mechanically.
Route of Exposure-Ingestion	If ingested seek medical advice
Route of Exposure-Inhalation	Not expected to be a problem as this product is solid. Avoid inhaling dust cutting on site.
Environmental hazards	No significant hazards

SECTION 3: COMPOSITION

Components	Classification	Percent (%)
Polypropylene (combination of different types)	n/a	<85
Mineral filler	n/a	>10
Add. Masterbatch	n/a	<5
N,N,N',N''-TETRAKIS(4,6- BIS(BUTYL-(N-METHYL-2,2,6,6- TETRAEME- THYLPYPERIDIN-4-YL) AMINO) TRIAZIN-2-YL)-4,7- DIAZADECAN-1,10-DIAMIN	 H317-1, H373-2, H411-2	<0.18
3,5-Di-(t-Butyl)-4-hydroxybenzoic acid, hexadecylester	 Aquatic Chronic 4, H413	<0.12



SECTION 4: FIRST AID MEASURES

First aid	No health conditions aggravated by exposure are identified. Contact the poison control center if any problem occurs
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SECTION 5: FIREFIGHTING MEASURES

General Fire Hazards	Product may burn upon extended exposure to open flames.
Hazardous Combustion Products	Upon decomposition this product may emit carbon dioxide, carbon monoxide and/or low molecular weight hydrocarbons
Extinguishing Media	Water spray, foam, carbon dioxide, or dry chemical
Fire Fighting Equipment/ Instructions	As in any fire, wear a self-contained breathing apparatus and full protective gear
Flashpoint	Not applicable
Auto Ignition	Not applicable
Flammability Classification	Combustible
Lower & Upper Explosive limit	Not applicable

SECTION 6: ACCIDENTAL RELEASE MEASURES

Containment Procedures	Not applicable
Clean -Up Procedures	Sweep waste fabric into a waste container and recycle, incinerate or landfill in conformity with local disposal regulations.
Evacuation Procedures	Not Applicable

SECTION 7: HANDLING AND STORAGE

Handling Procedures	Avoid exposure to heat, sparks or open flames. In the presence of an ignition source, dust, fine suspended in air is a potential dust explosion hazard. Refer Mason Plastabrick Installation Guide
Storage Procedures	Refer Mason Plastabrick Installation Guide



SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Product Exposure Limits	Product is not considered to present an inhalation health hazard under reasonably anticipated conditions of use.
Engineering Controls	Normal site ventilation is adequate.
PPE	Normal site PPE and procedures is adequate.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Blue Fabric with film laminated	Odor:	Odorless
Physical State:	Solid	pH:	Not Applicable
Vapor Pressure:	NIL	Evaporation Rate:	Not Applicable
Boiling Point:	Not Applicable	Melting Point/Range:	50-170°C
Solubility (H ₂ O):	Negligible	Specific Gravity:	Unknown
Vapor Density:	Not Applicable	Percent Volatiles:	NIL
Packing Density:	Not Applicable		

SECTION 10: CHEMICAL STABILITY AND REACTIVITY INFORMATION

Chemical Stability	Stable under ordinary conditions of use and storage
Conditions to Avoid	Combustible when exposed to open flames
Incompatibility	None known
Hazardous decomposition products	Refer section 5
Hazardous polymerization	Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

Acute and Chronic Toxicity General Product Information	The compound of this product is not known to be hazardous
Carcinogenicity	Product is considered non-hazardous
Epidemiology	No information available
Neurotoxicity	No information available
Mutagenicity	No information available
Teratogenicity	No information available
Other Toxicological Information	Specific toxicity testing has not been performed on this product. Hazard evaluation is based on information from similar products, raw material data, and technical literature.



SECTION 12: ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

Toxicity	Not expected to be harmful to aquatic or terrestrial organisms
Biodegradation	Material -- Expected to be persistent
Hydrolysis	Material -- Transformation due to hydrolysis not expected to be significant.
Photolysis	Material -- Transformation due to photolysis not expected to be significant.
Atmospheric Oxidation:	Material -- Transformation due to atmospheric oxidation not expected to be significant.
Bioaccumulative potential	Material -- Potential to bioaccumulate is low
Mobility in soil	Material -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.
Persistence, bioaccumulation and toxicity for substance(s)	This product is not, or does not contain, a substance that is a pbt or a vpvb.
Other adverse effects	No other adverse effects

SECTION 13: DISPOSAL CONSIDERATION

Disposal Recommendation The material can be reused or recycled. Disposal through controlled incineration or at an authorized waste dump.

Processing, use or contamination of this product may change the waste management options.

SECTION 14: TRANSPORTATION INFORMATION

No regulatory requirements.

SECTION 15: REGULATORY INFORMATION

For compliance with applicable regulations refer to Masons Plastabrick assurance statements and technical documentation.

SECTION 16: OTHER INFORMATION

This information and the product are provided on the condition that the person receiving them shall make his or her own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use thereof.

APPROVED BY:

Trent Mason, Director, Auckland 21.09.2021



PRODUCT CERTIFICATE

BARRICADE FR

CERTIFICATE NO: CM70072 Rev 3

Date of issue: 15 July 2022

1 CERTIFICATE HOLDER DETAILS

MASONS Plastabrick Ltd
 18A David McCathie Place
 Silverdale, Auckland 0932, New Zealand

info@mpb.co.nz
 Ph: +64 9 414 7551
 www.mpb.co.nz



2 PRODUCT CERTIFICATION BODY

Bureau Veritas Australia Pty Ltd
 3/435 Williamstown Road
 Port Melbourne VIC 3207
 Australia

Ph: 1800 855 190
 www.bureauveritas.com.au

Bureau Veritas Australia Pty Ltd

The complaints process for this certificate can be found here:
www.bureauveritas.com.au/your-feedback

KEY INFORMATION

3 SUMMARY OF DESCRIPTION OF BUILDING METHOD OR PRODUCT

Barricade FR is a flammability-rated synthetic breather-type flexible wall underlay and air barrier. It is manufactured from spun-bonded polypropylene and is coloured white and is available in 2.74 m, 1.37 m and 0.6 m wide rolls. It is printed "Barricade FR" and "Weather exposure: max 60 days" on the front face, and optionally with a customer logo

Continuation of description can be found in item 9. Supporting Information about Description of Building Product or Method.
Matters that should be taken into account in the use or application of the building method or product can be found in item 6. Conditions and Limitations of Use.

4 SUMMARY OF INTENDED USE OF BUILDING METHOD OR PRODUCT

Barricade FR is an exterior wall underlay and air barrier for timber and light-steel framed buildings

Continuation of intended use can be found in item 10. Supporting Information about Intended use of Building Product or Method.

5 BUILDING CODE PROVISIONS

The performance clauses of the New Zealand Building Code that are relevant to the intended use and with which the building method or product complies or contributes to (where used as part of a system).

B2 Durability – B2.3.1(a); B2.3.2
C3 Fire affecting areas beyond the fire source - C3.4(c)
E2 External moisture - E2.3.2 (contributes to); E2.3.5 (contributes to); E2.3.6 (contributes to); E2.3.7
F2 Hazardous building materials - F2.3.1

How the building method or product complies or contributes can be found in item 12. Basis for Certification. Any qualifications on the extent of that compliance can be found in item 6. Conditions and limitations of use.

WAIMAKARIRI DISTRICT COUNCIL
 Plans and specifications APPROVED in accordance
 with the Building Act 2004, clause 49 and the Building
 Regulations 1992, Clause 3
 BC240589 22/08/2024 Chrisk



This certificate is issued by an independent certification body accredited by JAS-ANZ, the product certification accreditation body appointed by the Chief Executive of the Ministry of Business, Innovation and Employment under the Building Act 2004. The Ministry does not in any way warrant, guarantee, or represent that the building method or product that is the subject of this certificate conforms with the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product. The Ministry disclaims to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages, and costs arising as a result of the use of the building method(s) or product(s) referred to in this certificate.

This certificate may only be reproduced in its entirety. It is advised to check that this certificate is currently valid and not withdrawn or suspended by referring to the Register of Product Certificates on the Building Performance website: <http://www.building.govt.nz>. CERTIFICATE V1.3



PRODUCT CERTIFICATE

BARRICADE FR



6 CONDITIONS AND LIMITATIONS OF USE

1. Barricade FR is certified for use:
 - on timber framed and steel framed buildings within the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and situated in NZS 3604:2011 wind zones up to and including 'Extra High'
 - with absorbent and non-absorbent wall claddings directly fixed to the frame; or installed over an 18mm minimum drained cavity; or with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber framed buildings or in accordance with NZBC Acceptable Solution E2/AS4 or by specific design for steel framed buildings.
2. Barricade FR shall be:
 - installed in accordance with E2/AS1, Clauses 9.1.5 & 9.1.7, or NASH Building Envelope Solutions: 2019 Light Steel Framed Buildings Clauses 9.1.5 & 9.1.7, and the Masons Barricade FR House Wrap Design and Installation Guide v1.0 June 2022
 - protected from sunlight within 60 days
 - used with Masons Hydro or 40 Below flashing tapes.

NOTE: Together, items 3, 4, 5 and 6 define scope of use.

7 HEALTH AND SAFETY INFORMATION

The compliance with any manufacturer's installation instructions, maintenance, OH & S statements, MSDS's and other Health and Safety declarations will provide the necessary Health and Safety Information pertaining to the product. Refer to section 12 for specific detail of compliance with the performance requirements of clauses F1 to F9 of the Building code.

8 SIGNATURES

Sam Guindi
Product Certification Manager

For and on behalf of
Bureau Veritas Australia Pty Ltd

Trent Mason
Director

For and on behalf of
MASON'S Plastabrick Ltd



This certificate is issued by an independent certification body accredited by JAS-ANZ, the product certification accreditation body appointed by the Chief Executive of the Ministry of Business, Innovation and Employment under the Building Act 2004. The Ministry does not in any way warrant, guarantee, or represent that the building method or product that is the subject of this certificate conforms with the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product. The Ministry disclaims to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages, and costs arising as a result of the use of the building method(s) or product(s) referred to in this certificate.

This certificate may only be reproduced in its entirety. It is advised to check that this certificate is currently valid and not withdrawn or suspended by referring to the Register of Product Certificates on the Building Performance website: <http://www.building.govt.nz>. CERTIFICATE V1.3



PRODUCT CERTIFICATE

BARRICADE FR



SCHEDULE: INFORMATION THAT SUPPORTS KEY INFORMATION

9 SUPPORTING INFORMATION ABOUT DESCRIPTION

Note: Previous certificate No: CM70072 Rev2 (22 February 2022) remains valid for Barricade FR labelled "weather exposure: max 42 days" while stocks are replaced with this product.

10 SUPPORTING INFORMATION ABOUT INTENDED USE

Masons Barricade FR House Wrap Design and Installation Guide v1.0 June 2022

11 SUPPORTING INFORMATION ABOUT CONDITIONS AND LIMITATIONS OF USE

1. Barricade FR Building Wrap has an AS 1530.2-1993 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable solutions C/AS2, paragraph 4.17.8 (b) for use in all situations (including situations exposed to view).
2. In cavity installations where stud spacing is greater than 450mm and flexible underlays only are used, an intermediate means of restraining the underlay and insulation from bulging into the drained cavity must be installed as required by E2/AS1 9.1.8.5.





PRODUCT CERTIFICATE

BARRICADE FR



12 BASIS FOR CERTIFICATION

- B2 Durability - By testing and comparison with Acceptable Solution E2/AS1 and referenced standard NZS2295:2006 Pliable, permeable building underlays
- C3 Fire affecting areas beyond the fire source - By testing and comparison with Acceptable Solutions C/AS1 and C/AS2 and referenced standard AS1530.2-1993
- E2 External moisture - By testing and comparison with Acceptable Solutions E2/AS1 and E2/AS4, and referenced standard NZS2295:2006 Pliable, permeable building underlays and referenced NASH Building Envelope Solutions: 2019 Light Steel Framed Buildings
- F2 Hazardous building materials - By analysis and comparison with the Building Code performance requirement F2.3.1

13 SUPPORTING DOCUMENTATION FOR CERTIFICATION

1. Acceptable Solutions and Verification Methods for New Zealand Building Code Clause B2 Durability Second edition (Amendment 12), 28 November 2019
2. C/AS2 Acceptable Solution for Buildings other than Risk Group SH for New Zealand Building Code Clauses C1-C6 Protection from Fire First edition (Amendment 2), 5 November 2020
3. C/VM1 Verification Method for Solid Fuel Appliances C/AS1 Acceptable Solution for Buildings with Sleeping (residential) and Outbuildings (Risk Group SH) For New Zealand Building Code Clauses C1-C6 Protection from Fire (Amendment 5), 5 November 2020
4. Acceptable Solution E2 External Moisture E2/AS4 First edition, 28 November 2019
5. E2 External Moisture, Verification Method E2/VM2, Cladding systems for buildings up to 25 m in height – including junctions with windows, door and other penetrations, Second edition, 29 November 2021
6. NZS 2295 2295:2006 Pliable, permeable building underlays
7. AS1530.2:1993 Methods for fire tests on building materials, components and structures
8. NASH Building Envelope Solutions: 2019 Light Steel Framed Buildings
9. NZWTA Report No. 13474737.3 AS1530.2-1993 - Methods for Fire Tests on Building Materials, Components and Structure, Part 2: Test for Flammability of Materials May 2019 "White synthetic building underlay - SP100, 100 gsm", 3 June 2021
10. Scion Report No 44203715 EVALUATION OF SP100 TO NZS 2295 October 2021



This certificate is issued by an independent certification body accredited by JAS-ANZ, the product certification accreditation body appointed by the Chief Executive of the Ministry of Business, Innovation and Employment under the Building Act 2004. The Ministry does not in any way warrant, guarantee, or represent that the building method or product that is the subject of this certificate conforms with the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product. The Ministry disclaims to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages, and costs arising as a result of the use of the building method(s) or product(s) referred to in this certificate.

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PRODUCT CERTIFICATE

BARRICADE FR



14 CONDITIONS RELATING TO NOTIFICATION

- (a) the certificate holder notifies the product certification body (Bureau Veritas) in writing of any intended change to any of the following particulars:
 - (i) the name, address, or contact details of the certificate holder:
 - (ii) any address of a location where a certified product is produced or manufactured:
- (b) the certificate holder notifies the product certification body (Bureau Veritas) in writing of any intended change, modification, or alteration to any of the following:
 - (i) the certified building method or product:
 - (ii) the method of its production or manufacture:
 - (iii) the product quality plan prepared in respect of the certified building method or product:
 - (iv) the application or installation instructions for the certified building method or product:
 - (v) any documentation relating to the use and maintenance of the certified building method or product:
- (c) if the certificate holder has any reason to suspect that the certified building method or product does not comply with the Building Code, the certificate holder notifies the product certification body (Bureau Veritas) in writing of the reason for that suspicion:
- (d) if the certificate holder or the product certification body (Bureau Veritas) finds that a certified building method or product that has been released on the market does not comply with the Building Code, the certificate holder discloses that fact in disclosure statements published in a form that is acceptable to the product certification body and to the chief executive:
- (e) if the certificate is suspended or revoked, the certificate holder—
 - (i) notifies all customers to whom the building method or product is regularly supplied; and
 - (ii) immediately ceases using the certificate, the mark of conformity, and any reference to the number of the certificate.





MASONS
Designed Smart, Built Tough.

Contractual Product Warranty

Barricade™ FR - Building Wrap

Consumer Guarantees Act 1993

The purpose of the Consumer Guarantees Act is to contribute to a trading environment in which the interests of consumers are protected and to this end provides that consumers have certain:

- guarantees when acquiring goods or services from a supplier including that the goods are reasonably safe and fit for purpose and are otherwise of an acceptable quality; and
- certain rights of redress against suppliers and manufacturers if goods or services fail to comply with a guarantee.

This contractual warranty does not in any way affect the consumers right or remedies in terms of the Consumer Guarantees Act.

Masons warranty

Masons Plastabrick Ltd New Zealand ("Masons Plastabrick Ltd") warrants **Barricade™ FR** for a period of **50 years** from the date of purchase that the **Barricade™ FR**, will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to tearing, rotting, breaking down of the materials to the extent set out in *Masons Plastabrick Ltd's* relevant published literature current at the time of installation. *Masons Plastabrick Ltd* warrants **Barricade™ FR** for a period of **50 years** but equal to the servicable life of the cladding.

Conditions of warranty

The warranty is strictly subject to the following conditions:

- Masons Plastabrick Ltd* will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation;
- the claimant's sole remedy for breach of warranty is (at *Masons Plastabrick Ltd's* option) that *Masons Plastabrick Ltd* will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product;
- the project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code (NZBC), regulations and standards;
- the **Barricade™ FR** must be installed and maintained strictly in accordance with the relevant *Masons Plastabrick Ltd* literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature.

Further, all other products, including coating and jointing systems, applied to or used in conjunction with the **Barricade™ FR** must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;

- Masons Plastabrick Ltd* will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing *Masons Plastabrick Ltd* will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);

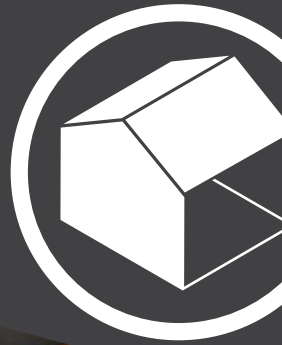
- this warranty is not transferable;

Disclaimer

The recommendations in *Masons Plastabrick Ltd's* literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (e) and (f) above. *Masons Plastabrick Ltd* has tested the performance of the **Barricade™ FR** when installed in accordance **Barricade™ FR** Manual, in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, as the successful performance of the relevant system depends on numerous factors outside the control of *Masons Plastabrick Ltd* (e.g. quality of workmanship and design) *Masons Plastabrick Ltd* shall not be liable for the recommendations made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards, as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant *Masons Plastabrick Ltd* installation manual are suitable for the intended project and that specific design is conducted where appropriate.

For Warranty claims please contact 0800 522 533

Thermakraft™
THERMAKRAFT
215



Thermakraft™

THERMAKRAFT 215

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC240589 22/08/2024 Chrisk

Self-supporting bituminous wall and roof underlay

Commonly referred to as 'Building Paper' Thermakraft 215 is a self-supporting, kraft paper based, bituminous building underlay that is suitable for use on roofs and walls in residential buildings. It is vapour permeable, meaning that liquid water from the outside is prevented from penetrating but water vapour from the inside can pass through and escape the building envelope. Thermakraft 215 is easy to install.





Thermakraft 215

Self-supporting bituminous wall and roof underlay

Application Method (Roofing)

Thermakraft 215 is a bituminous building underlay used on roofs in residential buildings.

- Thermakraft 215 can be used for roof construction.
- Run NO longer than 10m.

Long-run metal roofing/vertical or horizontal installation method

- Fix using stainless steel 8-12mm staples or 20mm flat head clouts, or appropriate proprietary fastenings on timber framed structure. Fixing at 300mm centres. Fixing types and requirements for steel framed structure can be found in the NZ Metal Roof and Wall Cladding Code of Practice.
- Refer to table below to determine underlay support requirements.

Roof Pitch	Span	Underlay Support Required	
		Horizontally Installed	Vertically Installed
≥ 10°	> 1200mm	Yes	Yes
	≤ 1200mm	No	No
< 10° (Min 3°)	> 1200mm	Yes	Yes
	≤ 1200mm	No	Yes

- Thermakraft 215 upper sheet lapped over lower sheets (shiplap) to ensure water is shed to the outer face.

Note: Thermakraft 215 can move downwards. To prevent this, it must be 'Captured' by the fastenings at each purlin. Horizontal fix must not be used on purlin distance greater than 1100mm to allow for 150mm laps.

- Must be laid firmly (tight/taut) without creases. All laps either vertical or horizontal must be a minimum of 150mm lap.
- When underlay support is required, Kingspan recommend using Ausmesh Roof Safety Mesh, Ausnet hexagonal netting or Thermastrap 201.
- Thermakraft 215 can be installed above the battens or purlins for profiled metal roof claddings and otherwise in accordance with NZBC E2/AS1.
- If required to achieve a lap seal (refer to NZ Metal Roofing Code of Practice), use Thermakraft Aluband window sealing tape or Thermakraft White General Purpose Tape.
- Thermakraft 215 will provide temporary weather protection during construction, same day coverage

recommended. DO NOT over expose the product to the weather or UV for more than 7 days in any roof applications.

- Thermakraft 215 may be unwound to the full length from the gutter to the ridge. However, when ridge ventilation is required Thermakraft 215 may be terminated or slit at the ridge purlin to allow a free passage of air.
- Thermakraft 215 must NOT overhang the gutter line by more than 20 mm, or if eaves flashings are used, terminate on the upper side of the flashing. More details can be found in the NZ Metal Roof and Wall Cladding Code of Practice.
- Flue penetrations must have a minimum distance of 50mm from Thermakraft 215 (refer to NZ Metal Roof and Wall Cladding Code of Practice 10.11.5).
- Thermakraft 215 must be free of tears and punctures, fit tightly and be lap taped around all penetrations (except flue penetrations), to provide drainage for any condensation, or surface water from leaks.

Note: Do not use Aluband on penetrations where Polybutene water pipes have been installed. Refer Pipe Manufacturers for instructions on sealing penetrations.

Concrete/Metal tile roofing

- Thermakraft 215 must be laid over rafters prior to fixing the tile battens. The maximum span between rafters for Thermakraft 215 is 1200mm. Masonry tile roofs must have antiponding boards in accordance with NZBC E2/AS1 Paragraph 8.2.5.
- Installed Thermakraft 215 may be laid over the top of the antiponding boards and draped into the gutter by no more than 20mm. Antiponding boards must be treated in accordance with E2/AS1 8.2.5.
- Do NOT Run Thermakraft 215 longer than 10m in length.

Application Method (Wall)

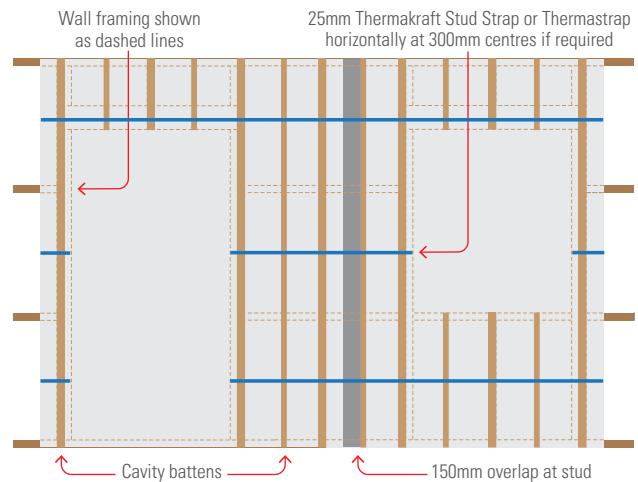
- Fix Thermakraft 215 underlay with the lap line printed side facing the exterior.
- Fix to all exterior walls from below bearers to the top plate. Pull the Thermakraft 215 underlay tight and fix securely to the frame with fasteners such as galvanized Little Grippers, 6mm-8mm staples or 20mm large head galvanized clouts at 300mm centres horizontally and vertically. Additional fasteners should be used around each opening to be cut out. Fixing types and requirements for steel framed structure can be found in the NZ Metal Roof and Wall Cladding Code of Practice.



Thermakraft 215

Self-supporting bituminous wall and roof underlay

- When fixing Thermakraft 215 underlay to Steel framing the same procedures applies, use adhesive spray or tape or flat head screws to fasten to the framing or thermal break, the exterior cladding fastenings will act as the permanent fixings.
 - Cover all windows and door openings with Thermakraft 215 underlay.
 - It is recommended that the Thermakraft 215 underlay is not cut and prepared for window installation until the arrival of the windows. Minimum of 150mm lap is required at joints, all vertical laps must be made over studs. Horizontal laps to be laid ship lap style allowing water to be shed to the outer face of the membrane.
 - When windows and doors are ready for installation, the Thermakraft 215 underlay covering the openings should cut at 45° and folded into the opening and securely fastened. Thermakraft window flashing tapes are recommended as the window flashing system.
- Note:** In accordance with NZBC Acceptable Solution E2/AS1, wall underlay must be prevented from bulging into the drained cavity. Where stud spacing is greater than 450mm Thermakraft Stud Strap run horizontal at 300 centres is an acceptable means of prevention.
- Once installed, Thermakraft 215 must not be left exposed to the weather or UV for a maximum of 7 days. Thermakraft 215 underlays will provide temporary weather protection during construction allowing work to continue. Internal linings and insulation must not be installed until the exterior cladding is completed.
 - Fastenings behind Brick Veneer Cladding must have an equivalent service life to that of Brick Veneer (50 years). Refer to NZS 3604.
 - Make good any forced tears with Thermakraft window flashing tapes. Any large areas which require repair may be covered with a second layer of underlay, a lap of 150mm is required.
 - Thermakraft 215 underlay must be installed by a licensed building practitioner.



Application Tips

- Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in a well ventilated area. Recommended minimum 7 days.

Handling and Storage

Thermakraft 215 underlay must be handled with care to prevent damage such as tearing and roll deformation. Due to the width of the product, care should be taken when installing in windy conditions.

The product must be stored under cover well away from direct moisture, rainfall contact and sunlight (UV). Care should be taken not stack other materials on top of the product.

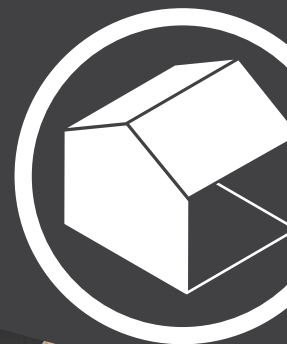


0800 806 595
www.thermakraft.co.nz

Thermakraft and Ausmesh products are brought to you by Kingspan Insulation NZ Limited.



Thermakraft™
THERMAKRAFT
215



Thermakraft™

THERMAKRAFT 215

Self-supporting bituminous wall and roof underlay

Commonly referred to as “Building Paper” Kingspan Thermakraft 215 is a self-supporting, kraft paper based, bituminous building underlay that is suitable for use on roofs and walls in residential buildings. It is vapour permeable, meaning that liquid water from the outside is prevented from penetrating but water vapour from the inside can pass through and escape the building envelope. Thermakraft 215 is easy to install.

Thermakraft 215 comes in two roll sizes:

1250mm wide	20m long	25m ² coverage*
1250mm wide	40m long	50m ² coverage*

* **Note:** m² is the roll size for actual coverage, allow for laps and joins.





Thermakraft 215

Self-supporting bituminous wall and roof underlay

Scope of Use (Roof Application)

- Suitable with masonry tile, metal tile and profiled metal roof cladding.
- Direct fix or cavity fix.
- Can be used on roofs up to and including NZS 3604 'Extra High' wind zones.
- Refer to installation guide regarding underlay support requirements.
- Will provide temporary weather protection during construction (maximum 7 days), same day coverage recommended.

Scope of Use (Wall Application)

- Suitable for use with both timber and steel framing, either direct fix or in conjunction with an 18mm minimum drained cavity.
- Can be used with absorbent wall claddings (e.g. timber, brick or fibre cement) or non-absorbent wall claddings (e.g. metal or plastic).
- Can be used with masonry veneer in accordance with NZS 3604.
- Suitable for buildings situated in NZS3604 Building Wind Zones up to and including 'Very High'.
- Thermakraft 215 can be used as an air barrier to reduce wind entry and is highly water resistant.
- Will provide temporary weather protection during construction (maximum 7 day exposure), same day coverage recommended.

General

Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in well ventilated area. Recommended minimum 7 days.

Property Performance

The following data represents the minimum pass rates required by the NZBC. This product tests well beyond the minimum standards. If you require actual performance results, please contact your local Kingspan Insulation representative.

Limitations

- In roof and wall applications must NOT be exposed to the weather or UV for more than 7 days.
- Must NOT be used under translucent sheeting.
- Is not fire retardant.
- Not suitable for School Property, please refer to Ministry of Education; Weather-Tightness & Durability requirements for School Property.

Compliance

Thermakraft 215 meets the requirements of NZBC Acceptable Solutions E2/AS1, Table 23 and NZS 2295:2006 for both wall & roof underlay.

Durability

Meets the Performance Requirements of NZBC Clause B2, Durability B2.3.1 (a) 50 years and B2.3.1 (b) 15 years, E2 External Moisture providing:

- It is installed in accordance to Installation Guide.
- Run length is no greater than 10 meters.
- Is not exposed to weather or UV for more than 7 days.
- Is installed by or under guidance of Licensed Building Practitioners.
- Is installed in accordance with the MRM Code of Practice.
- Is compatible with the cladding system used.*

* **Note:** roof cladding system compatibility testing must be done first before installation.

NZBC E2/AS1 Wall Underlay Requirements					
NZBC E2/AS1 Table 23 (NZS2295) Roof Underlay Properties	Absorbency	Vapour Resistance	pH of Extract	Shrinkage	Water Resistance
Property Performance Requirement	≥ 150gsm	≤ 7 MN.s/g	≥ 5.5 and ≤ 8	≤ 0.5%	100mm for 24 hrs
Property Performance	Pass	Pass	Pass	Pass	Pass



Thermakraft 215

Self-supporting bituminous wall and roof underlay

NZS2295:2006 Classification

NZBC E2/AS1 Table 23 (NZS2295)			
Roof Underlay Properties	Flammability Index	Wind Zone	NZS2295:2006 Index
Property Performance Requirement		R2	R2
Property Performance	Non-Fire Retardant	Up to Extra High	Self - Support

Control of Condensation

In climatic regions where condensation risks are high, such as cold or high humidity areas, care needs to be taken in specifying the correct design and installation method to prevent moisture build-up in the roof cavities.

Factors which adversely affect the condensation risk in roofing systems include:

- Humid, and/or cold climatic regions.
- Warm/Skillion roof construction.
- Low roof cavity air volume and restricted air movement.
- Omitting Vapour Control Layers.
- Occupancy activities which have high moisture loading on conditioned spaces.
- Ceiling penetrations and entry of warm air into roof cavities.
- Low pitched roof.
- Bulk insulation.
- Building structures ability to naturally dry construction moisture.

Skillion and Warm Roof Construction are particularly sensitive to moisture accumulation and the design and installation of roof construction needs to take into account the higher condensation risks. Refer to MRM Code of Practice for details.

For passive ventilation of the roof space, it is recommended that all roof underlays are terminated at the ridge, and if not it should be slit or slotted to allow for passive ventilation. (For further information refer to the NZ MRM Roofing Code of Practice).

Product Warranty

Standard Kingspan Insulation Warranty applies. Refer to Kingspan Insulation Warranty statement for further details. This is available online at thermakraft.co.nz or call **0800 806 595**.



0800 806 595
www.thermakraft.co.nz

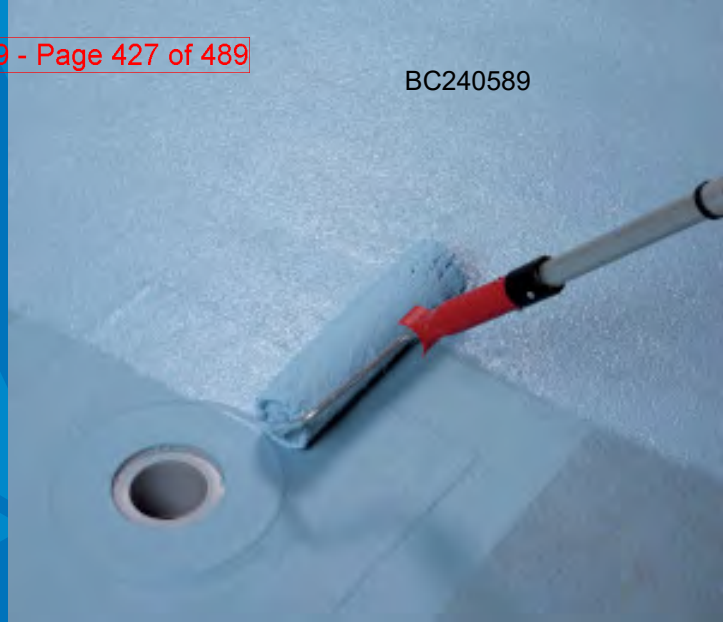
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The recommendations contained in Kingspan's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Kingspan (for example quality of workmanship and design), Kingspan shall not be liable for the recommendations in that literature and the performance of the Product, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards. Literature subject to change without notification. Latest documentation can be found online. E&OE.

MAPELASTIC AQUADEFENSE

Ready-to-use, ultra quick-drying, flexible liquid membrane for waterproofing interior and exterior surfaces



WHERE TO USE

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC240589 22/08/2024 - ChrisK

Waterproofing before applying ceramic, stone, and mosaic coverings in:

- bathrooms and shower cubicles;
- laundry rooms;
- saunas and damp environments in general;
- balconies and terraces.

Mapelastico AquaDefense can be applied on:

- concrete;
- cementitious screeds and screeds made using special binders (**Topcem, Topcem Pronto, Mapecem, or Mapecem Pronto**);
- plasterboard (for application in interior only);
- old ceramic tiles, terrazzo, and stone material;
- cementitious render.

ADVANTAGES

- **Mapelastico AquaDefense** is ready to use.
- **Mapelastico AquaDefense** is a rapid product:
 - resists rainwater 1 hour after applying the first coat and 3 hours after applying the second coat.;
 - ceramic can be bonded after 4 hours (at +23°C and 50% R.H. when applied on a dry screed with less than 3% residual moisture).
- **Mapelastico AquaDefense** is elastic: at +23°C it has 3.2 mm crack-bridging capacity without reinforcement.

TECHNICAL CHARACTERISTICS

Mapelastico AquaDefense is a totally solvent-free, ready-to-use, ultra-quick drying, one-component light blue, synthetic resin-based paste in water dispersion.

Mapelastico AquaDefense is easy to apply using a long-haired roller, brush, or trowel on horizontal, sloping, and vertical surfaces. **Mapelastico AquaDefense** dries very quickly to form a flexible membrane without a sticky surface. It is resistant to light pedestrian traffic after just 3 hours and forms an excellent grip with all types of

adhesive for laying ceramic, stone material, and mosaic of all kinds. The flexible nature of **Mapelast** **AquaDefense** helps it withstand normal movements caused by expansion and shrinkage of the substrate due to temperature variations and vibration.

Tiles laid on floors waterproofed with **Mapelast** **AquaDefense** by using C2F-class MAPEI adhesives (such as **Keraquick Maxi S1**, **Ultralite S1 Flex Quick**, etc.) and grouted with **Ultracolor Plus** can be opened to pedestrian traffic within 12 hours of starting the work.

Mapelast **AquaDefense** is resistant to water, lime water (pH >12), and detergents commonly used for cleaning residential environments.

RECOMMENDATIONS

- Do not apply **Mapelast** **AquaDefense** if the temperature is lower than +5°C.
- **Mapelast** **AquaDefense** must always be covered with ceramic, mosaic or stone.
- Do not apply **Mapelast** **AquaDefense** on cementitious substrates with residual humidity higher than 3% or subject to recurring rising damp.
- Do not apply **Mapelast** **AquaDefense** on crumbly cementitious substrates, old floors that are not well bonded to the substrate or surface treatments which could affect the bond.
- Do not use **Mapelast** **AquaDefense** to cover cracks.
- Protect the surface from rain for at least 1 hour after applying the first coat and 3 hours after applying the second coat (times refer to +23°C and 50% relative air humidity when the product is applied on dried screeds with residual moisture lower than 3%).

APPLICATION PROCEDURE

Preparation of the substrate

Substrates must be well-cured, sound, clean, dry, and free of oil, grease, cement laitance, old paint, and any other substance which could affect the bond. Cementitious substrates must be stable and dry, with no rising damp. Surface dust must be suitably removed.

Smooth or level the surface with **Planitop Fast 330** or **Adesilex P4**.

On old ceramic floors with hollowed or empty tile joints, or whenever slopes on surfaces need to be restored before the application of **Mapelast** **AquaDefense**, it is recommended to smooth or level the surface using **Adesilex P4**. Such substrates must be thoroughly checked and all coatings, such as wax, water-repellent treatments, etc. must be removed from the surface with a suitable cleaning product (such as **UltraCare HD Cleaner**) and/or by abrasion.

Before applying **Mapelast** **AquaDefense**, pay particular attention to expansion joints and fillet joints between horizontal and vertical surfaces: in those areas apply **Mapeband** (or as alternatives **Mapeband PE 120**) together with the relevant special pieces, bonded using **Mapelast** **AquaDefense**.

To waterproof drains on terraces and balconies, use the special kits from the **Drain** range. Structural joints must be waterproofed with **Mapeband TPE** bonded to the substrate with **Adesilex PG4**.

Eco Prim Grip Plus can be used to further improve the bond of **Mapelast** **AquaDefense** on old ceramic or natural stone floors.

Application of the product

Mapelast **AquaDefense** must be applied in two thin (approx. 0.4 mm per coat), even coats with a long piled roller, brush or trowel. Wait until the first coat is dry, making sure the product becomes darker with a matt finish, before applying the second coat perpendicular to the first one (approximately 1 hour at +23°C and 50% relative air humidity and with substrates having residual humidity lower than 3%).

The two coats of **Mapelast** **AquaDefense** must create a robust, flexible, and continuous film. Make sure there are no interruptions in the film caused by imperfections in the substrate.

If **Mapelast** **AquaDefense** is applied to form an anti-fracture membrane on cracked substrates, we recommend embedding the reinforcement fabric **Mapetex 50** into the first coat while it is still fresh.

Mapetex 50 must be pressed down with a spiked roller on the first coat of **Mapelast** **AquaDefense** while it is still fresh.

Wait until the first coat is dry, then apply the second coat in order to completely embed **Mapetex 50**.

Drying times may increase as **Mapetex 50** insertion increases the final thickness of the applied film.

Ceramic, stone, and mosaic tiles can be laid 4 hours after the application of the second coat (at +23°C and 50% relative air humidity) MAPEI adhesive to be selected depending on the final use of the flooring or wall and the

tile type and format.

In exterior applications on balconies and terraces, use a Mapei adhesive with minimum class C2S1 according to EN 12004 standard such as **Keraflex Maxi S1 Zero**, **Keraflex Extra S1 Zero**, or **Ultralite S1 Flex Zero**.

In interiors, use a Mapei adhesive with minimum class C2 according to EN 12004 standard, such as **Adesilex P9**, or **Keraflex**.

For the rapid installation of tiles, use an adhesive with minimum class C2F such as **Keraquick Maxi S1** or **Ultralite S1 Flex Quick**.

For mosaic tiles of all types, use **Ultralite S1 Flex Zero** white or **Adesilex P10 + Isolastic** diluted with 50% of water.

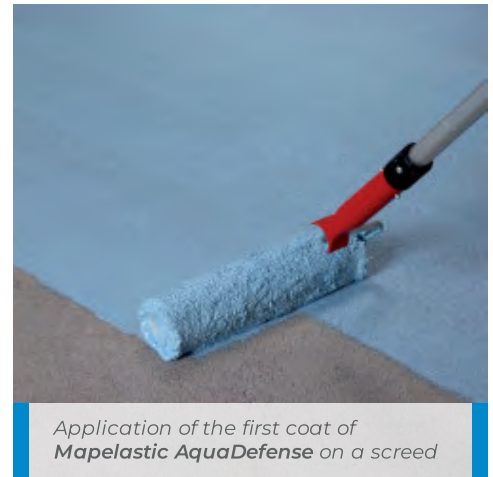
Grout tile joints with a special cementitious grout (such as **Ultracolor Plus** - class CG2WFA, **Keracolor FF**, **Keracolor GG** mixed with **Fugolastic**) or epoxy grout (for example **Kerapoxy**, **Kerapoxy Easy Design**, or **Kerapoxy CQ** - class RG). Seal expansion joints with a special MAPEI sealant (such as **Mapesil AC**, **Mapesil AC Eco**, **Mapesil LM**, or **Mapeflex PU 45 FT**, according to requirements).



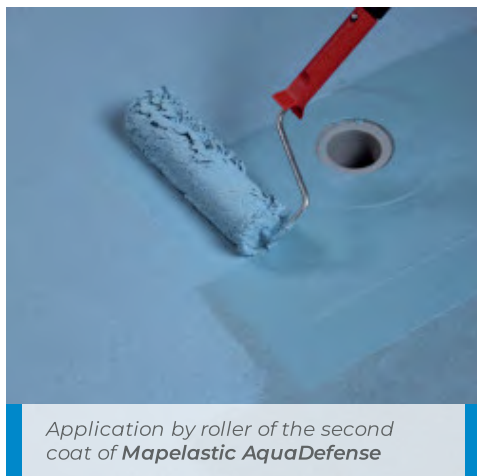
Impregnating **Drain Vertical** fabric with **Mapelastic AquaDefense**



Application of **Mapeband** on a wall-floor fillet joint with **Mapelastic AquaDefense**



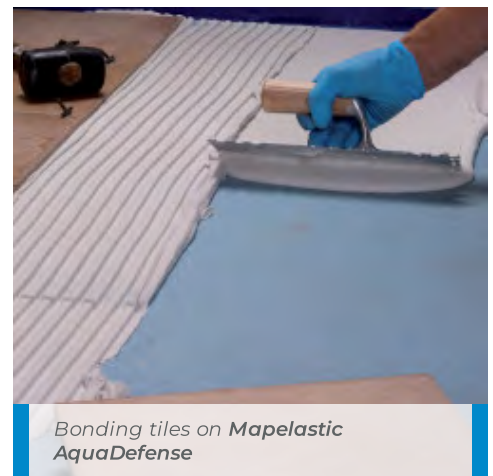
Application of the first coat of **Mapelastic AquaDefense** on a screed



Application by roller of the second coat of **Mapelastic AquaDefense**



Application of **Mapelastic AquaDefense** by brush between floor and wall before applying **Mapeband**



Bonding tiles on **Mapelastic AquaDefense**

CLEANING

Mapelastic AquaDefense can be removed easily from tools and surfaces while still fresh with water.

CONSUMPTION

1 kg/m² for 2 coats.

PACKAGING

3.5 kg, 7.5 kg, and 15 kg rectangular bucket.

STORAGE

Mapelastic AquaDefense can be stored for 24 months in its original packaging in a dry area. Protect from frost.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instructions for the safe use of our products can be found on the latest version of the SDS available from our website www.mapei.com

PRODUCT FOR PROFESSIONAL USE

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Consistency:	paste
Colour:	light blue
Density:	1.30 g/cm ³
pH:	9.5
Solid content:	66
Brookfield viscosity:	30,000 mPa·s (needle 6 - 10 rpm)

APPLICATION DATA (at +23°C - 50% R.H.)

Minimum filming temperature:	+5°C
Recommended application temperature range:	from +5°C to +35°C
Waiting time between each coat:	approx. 60 minutes (when dry touch)
Waiting time before application of the covering:	3-4 hours
Complete drying of 1 mm thick layer:	12 hours

FINAL PERFORMANCE (0.55 mm thickness)

	EN 14891 acceptance range	Performance figures for Mapelastic AquaDefense
Initial adhesion (EN 14891-A.6.2):	> 0.5 N/mm ²	1.7 N/mm ²
Adhesion after immersion in chlorinated water (EN 14891-A.6.3):	> 0.5 N/mm ²	> 1.0 N/mm ²
Adhesion after heat ageing (EN 14891-A.6.5):	> 0.5 N/mm ²	> 1.8 N/mm ²
Adhesion after freeze/thaw cycles (EN 14891-A.6.6):	> 0.5 N/mm ²	> 0.9 N/mm ²

Adhesion after immersion in alkaline water (lime water saturated solution) (EN 14891-A.6.9):	> 0.5 N/mm ²	BC240589 > 1.3 N/mm ²
Adhesion after immersion in sodium hypochlorite solution (EN 14891-A.6.7):	> 0.5 N/mm ²	> 1.2 N/mm ²
Crack-bridging ability at +23°C (EN 14891-A.8.2):	> 0.75 mm	3.2 millimeters
Crack-bridging ability at -5°C (EN 14891-A.8.3):	> 0.75 mm	1.6 millimeters
Impermeability to water under pressure (EN 14891-A.7) (1500 kPa):	No penetration	No penetration

Adhesion strength values according to EN 14891 determined with **Mapelastic AquaDefense** and type C2 cementitious adhesive in compliance with EN 12004

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement or replace requirements per the TDS in force at the time of the MAPEI product installation.

The most up-to-date TDS can be downloaded from our website www.mapei.com.

ANY ALTERATION TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.

2103-10-2023 en (IT)

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BRANZ Appraised

Appraisal No. 484 [2018]

**MAPEGUM WPS, MAPELASTIC,
MAPELASTIC SMART AND
MAPELASTIC AQUADEFENSE
WET AREA MEMBRANES**

Appraisal No. 484 [2018]

This Appraisal replaces BRANZ
Appraisal No. 484 [2012]

Amended 06 October 2022



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



MBP [NZ] Ltd

Exclusive distributor of Mapei
products in New Zealand

PO Box 12 326
Penrose
Auckland

Tel: 09 921 1994
Fax: 09 921 1993

Web: www.MBPLtd.co.nz



BRANZ

BRANZ

1222 Moonshine Rd,
RD1, Porirua 5381
Private Bag 50 908
Porirua 5240,
New Zealand
Tel: 04 237 1170
branz.co.nz



Product

- 1.1 Mapegum WPS and Mapelastc AquaDefense are one-component, liquid-applied waterproofing membranes for internal applications under trafficable floor finishes.
- 1.2 Mapelastc and Mapelastc Smart are two-component liquid-applied waterproofing membranes suitable for internal applications on substrates under trafficable floor finishes.

Scope

- 2.1 Mapegum WPS, Mapelastc, Mapelastc Smart and Mapelastc AquaDefense Wet Area Membranes have been appraised for use as waterproofing membranes for the internal wet areas of buildings, within the following scope:
 - on floor substrates of concrete, flooring grade particle board, plywood, fibre cement compressed sheet and fibre cement sheet tile underlay, and on wall substrates of concrete, concrete masonry, wet area fibre cement sheet lining systems and wet area plasterboard lining systems; and,
 - when protected from physical damage by trafficable floor finishes; and,
 - where floors are designed and constructed such that deflections do not exceed 1/360th of the span.
- 2.2 The use of Mapegum WPS, Mapelastc, Mapelastc Smart and Mapelastc AquaDefense Wet Area Membranes on concrete slabs where hydrostatic or vapour pressure is present is outside the scope of this Appraisal.
- 2.3 Movement and control joints in the substrate must be carried through the membrane and trafficable floor finish. The design and construction of the substrate and movement and control joints is specific to each building, and is therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.
- 2.4 The trafficable floor finishes are outside the scope of this Appraisal.
- 2.5 The membranes must be installed by trained applicators, approved by MBP [NZ] Ltd, to the conditions of the Technical Data Sheet [TDS] of the products.

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, clause 49 and the Building
Regulations 1992, Clause 3
BC240589 22/08/2024 Chrisk



Building Regulations

New Zealand Building Code [NZBC]

3.1 In the opinion of BRANZ, Mapegum WPS, Mapelastastic, Mapelastastic Smart and Mapelastastic AquaDefense Wet Area Membranes, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 [b] 15 years and B2.3.2. Mapegum WPS, Mapelastastic, Mapelastastic Smart and Mapelastastic AquaDefense Wet Area Membranes meet these requirements. See Paragraph 9.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.6. Interior wet area floors and walls incorporating Mapegum WPS, Mapelastastic, Mapelastastic Smart and Mapelastastic AquaDefense Wet Area Membranes will meet this requirement. See Paragraphs 11.1-11.7.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Mapegum WPS, Mapelastastic, Mapelastastic Smart and Mapelastastic AquaDefense Wet Area Membranes meet this requirement.

Technical Specification

4.1 Materials supplied by MBP [NZ] Ltd are as follows:

- **Mapegum WPS** - a one-part, fast drying, polymer-based, ready-to-use, liquid-applied membrane. It is supplied as a light grey-coloured paste in 5, 10 and 25 kg buckets.
- **Mapelastastic** - a two-part, flexible, cementitious, liquid-applied membrane. It is supplied as a Part A powder in 24 kg multi-wall bags and a Part B liquid in 8 kg plastic containers. When dry, the membrane is grey in colour.
- **Mapelastastic Smart** - a two-part, flexible, cementitious, liquid-applied membrane. It is supplied as a Part A powder in 20 kg multi-wall bags and a Part B liquid in 10 kg plastic containers. When dry, the membrane is light grey in colour.
- **Mapelastastic AquaDefense** - a one-part, solvent-free, ultra-quick drying synthetic resin-based paste in water dispersion liquid-applied membrane. It is supplied as a light blue coloured paste in 15 kg drums.
- **Mapeband and Mapeband Gaskets** - a rubber-coated polyester tape for waterproofing expansion joints and sealing around drains and pipes. Available as a tape 120 mm wide in rolls 50 m long, and also in ready-made internal and external corners (90 and 270 degrees) and pipe gaskets 118 x 118 mm and 300 x 300 mm, "T" profiles 515 mm x 315 mm and cross profiles 515 x 515 mm.
- **Mapeband PE120** - a PVC fabric tape used to reinforce wall/wall and floor/wall joints. It is only used with Mapegum WPS and Mapelastastic AquaDefense. Available as a tape 120 mm wide, in rolls 10 m and 50 m long, and also as preformed angles 90° and 270°.
- **Mapetex Sel** - a macro-holed non-woven fabric, used to reinforce the first and second layer of the waterproofing membranes. It is supplied as a polypropylene white fabric, in rolls 100 mm, 200 mm and 1 m wide x 25 m long.
- **Mapenet 150** - a glass fibre mesh used to reinforce the membranes. It is supplied as a blue mesh in rolls 1 m wide and 50 m long.
- **Mapeband SA** - a self-adhesive butyl rubber tape used to reinforce all joints. It is supplied as a 2 mm thick, 100 mm wide tape in rolls 25 m long.
- **Mapei Primer 3296** - an acrylic primer for absorbent surfaces. It is an opaque colour and supplied in 5 and 10 kg drums.

Handling and Storage

5.1 All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and out of freezing conditions. The membrane products have a shelf life of 24 months from date of manufacture in the original unopened packaging. Once opened, the products must be used within 3 months.



Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
- Mapelastic Smart, Version 2013-4-2022-gb, 2022.
 - Mapegum WPS, Version 2014-10-2020-en (IT), 2020.
 - Mapelastic, Version 331-5-2018-gb, 2018.
 - Mapelastic AquaDefense, Version 2013-11-2016-gb, 2016.
- 6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

- 7.1 Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes are for use in buildings where an impervious waterproof membrane is required to floors and walls to prevent damage to building elements and adjoining areas.
- 7.2 Mapegum WPS and Mapelastic AquaDefense are designed to be used where a one-component product is preferred.
- 7.3 The membranes must be protected from physical damage by the application of trafficable floor finishes.
- 7.4 Movement and control joints may be required depending on the shape and size of the building or room, and the floor finish specified. Design guidelines can be found in the BRANZ Good Practice Guide: Tiling.
- 7.5 Timber framing must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of AS/NZS 1170. In all cases, framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported. Timber framing systems supporting the substrates must be constructed such that deflections do not exceed 1/360th of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.

Substrates

Plywood

- 8.1 Plywood must be a minimum of 17 mm thick complying with AS/NZS 2269, CD Grade Structural with sanded C face upwards and treated to H3 [CCA treated]. LOSP treated plywood must not be used.
- 8.2 The plywood must be laid with the face grain at right angles to the floor joists. The plywood must be supported with dwangs or framing with a maximum span of 400 mm in each direction, fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres along the sheet edges and 200 mm through the body of the sheets.

Fibre Cement Compressed Sheet/Fibre Cement Sheet Tile Underlay

- 8.3 Fibre cement compressed sheet and tile underlay must be manufactured to comply with the requirements of AS/NZS 2908.2 and must be specified by the manufacturer as being suitable for use as a wet area substrate. Installation must be in accordance with the instructions of the manufacturer.

Particleboard

- 8.4 Particleboard must be specified for the end use in accordance with NZS 3602.

Concrete and Concrete Masonry

- 8.5 Concrete and concrete masonry substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101, concrete slab-on-ground to NZS 3604 or NZS 4229 and concrete masonry to NZS 4229 and NZS 4230.



Wet Area Wall Linings

- 8.6 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588, and be suitable for use in internal wet areas.
- 8.7 Fibre cement sheet must be suitable for use in wet areas and comply with AS/NZS 2908.2.
- 8.8 Installation of plasterboard or fibre cement wall linings must be carried out in accordance with the instructions of the manufacturer.

Durability

Serviceable Life

- 9.1 The Mapegum WPS, Mapelastik, Mapelastik Smart and Mapelastik AquaDefense Wet Area Membranes, when subjected to normal conditions of environment and use, are expected to have a serviceable life of at least 15 years and be compatible with trafficable floor finishes with a design service life of 15-25 years.

Maintenance

- 10.1 No maintenance of the membranes will be required provided significant substrate movement does not occur and the trafficable floor finish remains intact. Regular checks must be made of the floor finish to ensure it is sound and will not allow moisture to penetrate. Any issues must be repaired immediately by repairing the floor finish.
- 10.2 In the event of damage to a membrane, the trafficable floor finish must be removed and the membrane repaired by removing the damaged portion and applying a patch with sufficient overlap over the damaged section.
- 10.3 Drainage outlets must be maintained to operate effectively, and floor finishes must be kept clean.

Internal Moisture

- 11.1 Mapegum WPS, Mapelastik, Mapelastik Smart and Mapelastik AquaDefense Wet Area Membranes are impervious to water, and when appropriately designed and installed, will avoid the likelihood of water penetrating behind linings or entering concealed spaces.
- 11.2 Surfaces must be finished with a trafficable floor finish. A means of compliance with NZBC Clause E3.3.3 and E3.3.4 is given in NZBC Acceptable Solution E3/AS1, Paragraph 3.1.1 b), 3.1.2 b) and 3.3.1 b).
- 11.3 Falls in showers and shower areas must be a minimum of 1 in 50. In unenclosed showers, falls must extend a minimum of 1,500 mm out from the shower rose. Floor wastes and drainage flanges must be provided and the floor must fall to the outlet.
- 11.4 Mapegum WPS, Mapelastik, Mapelastik Smart and Mapelastik AquaDefense Wet Area Membranes are suitable for use to contain accidental overflow to meet NZBC Clause E3.3.2. A means of compliance for overflow is given in NZBC Acceptable Solution E3/AS1, Paragraph 2.
- 11.5 The waterproofing membrane must completely cover shower bases, and for unenclosed showers it must extend a minimum of 1,500 mm out from the shower rose. Further design guidance on waterproofing wet areas, including waterproofing walls and junctions can be obtained from AS 3740, the BRANZ Good Practice Guide: Tiling, and flooring and wall lining manufacturers.
- 11.6 Where water resistant wall finishes such as prefinished sheet materials are used, they must be installed as per the NZBC requirements. They must flash over the membrane a minimum of 30 mm.
- 11.7 BRANZ recommends the entire floor be covered by a waterproof membrane for bath, shower and spa rooms where timber and plywood floors are used.



Installation Information

Installation Skill Level Requirement

- 12.1 Installation of the membranes must be completed by trained applicators approved by MBP [NZ] Ltd
- 12.2 Installation of substrates must always be carried out in accordance with the Mapegum WPS, Mapelastastic, Mapelastastic Smart and Mapelastastic AquaDefense Wet Area Membranes Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

Preparation of Substrates

- 13.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents.
- 13.2 The relative humidity of concrete substrates must be 75% or less before membrane application. The concrete substrates can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin No. 585.
- 13.3 All voids, cracks, holes, joints and excessively rough areas must be filled to achieve an even and uniform surface. Junctions of substrate abutments, such as at wall/floor and wall/wall junctions must have a reinforcement installed as set out in the Technical Literature.
- 13.4 Refer to the product manufacturer for correct priming requirements.

Membrane Installation

- 14.1 Installation must not be undertaken where the substrate surface temperature is below 8°C or above 35°C.
- 14.2 Mapelastastic and Mapelastastic Smart require the liquid and powder to be mixed and left to stand for 5 minutes before re-mixing, then applying. Mapegum WPS and Mapelastastic AquaDefense must be thoroughly stirred before application.
- 14.3 The membranes must be applied in a minimum of two coats, at the rates set out in the Technical Literature. Subsequent coats must be applied in an opposite direction to the previous coat. The total finished system thickness of the Mapegum WPS and Mapelastastic AquaDefense membranes must be a minimum of 1 mm and the Mapelastastic and Mapelastastic Smart Membranes must be a minimum of 2 mm.
- 14.4 Application can be made by roller [medium/long nap], brush [long bristle], or a notched steel trowel [finished with a flat steel trowel].
- 14.5 Reinforcement fabric or Mapeband is bedded into the wet layer between coats to provide movement protection at wall/wall and wall/floor junctions, or any other areas such as joints in the flooring substrate, floor cracks, or around penetrations in the membrane. In all other situations, reinforcement provisions as set out in this Appraisal and the Technical Literature apply.
- 14.6 Clean up may be undertaken with water.
- 14.7 For further information, refer to the Technical Literature.

Floor Finishes

- 15.1 The membranes must be fully cured before installing the trafficable floor finish. The cured membranes must be protected at all times to prevent mechanical damage, so may require temporary covers until the finishing is completed.
- 15.2 Tiling must be undertaken in accordance with AS 3958.1 and the BRANZ Good Practice Guide: Tiling. The compatibility of the tile adhesive must be confirmed with the adhesive manufacturer or MBP [NZ] Ltd.



Impregnating Drain Vertical fabric with Mapelastiac AquaDefense



Application of Mapeband to a wall-floor joint with Mapelastiac AquaDefense



Application of the first coat of Mapelastiac AquaDefense



Application of the second coat of Mapelastiac AquaDefense



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09 February 2018

MAPEGUM WPS, MAPELASTIC,
MAPELASTIC SMART AND MAPELASTIC
AQUADEFENSE WET AREA MEMBRANES

Inspections

- 16.1 The Technical Literature must be referred to during the inspection of membrane installations.
- 16.2 Critical areas of inspection are:
- Construction of substrates, including crack control and installation of bond breakers and movement control joints.
 - Moisture content of the substrate prior to the application of the membrane.
 - Acceptance of the substrate by the membrane installer prior to application of the membrane.
 - Installation of the membrane to the manufacturer's instructions, particularly installation to the correct thickness and use of reinforcement.
 - Membrane curing and integrity prior to the installation of floor finish including protection from mechanical damage during curing and prior to installation.

Health and Safety

- 17.1 Safe use and handling procedures for the membranes are provided in the Technical Literature. The materials must be used in conjunction with the relevant Material Safety Data Sheet.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

- 18.1 The following testing has been undertaken by various organisations:
- Mapegum WPS and Mapelastic Wet Area Membranes in accordance with; EN 14891 for initial tensile adhesion strength, tensile strength after water contact, tensile adhesion strength after heat ageing, tensile adhesion strength after contact with lime water, tensile adhesion strength after contact with chlorine water, tensile adhesion strength after freeze-thaw cycles, waterproofing and crack bridging ability; DIN 53504 for tensile strength and maximum elongation after exposure to air and water immersion [Mapegum WPS only] and; Mapei internal method for water absorption after exposure and water immersion.
 - Mapelastic Smart in accordance with EN 1502-4 for bond strength to concrete, freeze thaw, flexibility, static and dynamic crack bridging, water vapour permeability, impermeability to water and bond strength after water immersion, heat ageing, freeze-thaw and alkali ageing.
 - Mapelastic in accordance with; EN 14891 for crack bridging after 28 days exposure to air, crack bridging after 7 days exposure to air and 21 days immersion in water, adhesion to concrete surface after 28 days exposure to air, adhesion to concrete surface after 28 days exposure to air and 21 days immersion in water; DIN 52615 for resistance to water vapour transmission and; Mapei internal method for deformability under low temperatures.
 - Mapegum WPS in accordance with; EN 1384 for tensile adhesion strength after exposure and water immersion; UNI 8202/22 for water absorption after exposure and water immersion and; DIN 53505 for shore A hardness.
 - Mapelastic AquaDefense in accordance with AS/NZS 4858 Appendix A including effect of heat ageing, bleach, detergent and water on tensile and elongation, water vapour transmission to ASTM E96-92 and cyclic movement resistance requirements of AS/NZS 4858 Appendix B. Testing to ANSI 118.10-1999 including seam strength, breaking strength, dimensional stability, resistance to fungi, static head and shear strength to ceramic tile and cement mortar. Also tensile adhesion on a plywood substrate and low temperature flexibility of the membrane.
- 18.2 The above test methods and results have been reviewed by BRANZ and found to be satisfactory.
- 18.3 Testing of Mapegum WPS and Mapelastic has been undertaken by BRANZ for durability in accordance with AS/NZS 4858, Appendix A covering tensile strength and elongation after immersion in water, bleach, detergent, and after heat ageing.
- 18.4 Testing for suitability of Mapelastic over particleboard in accordance with AS/NZS 4858, Appendix C has been undertaken by BRANZ and found to be satisfactory.



Other Investigations

- 19.1 An assessment was made of the durability of the Mapegum WPS, Mapelastastic, Mapelastastic Smart and Mapelastastic AquaDefense Wet Area Membranes by BRANZ technical experts.
- 19.2 Site inspections have been carried out by BRANZ to examine the practicability of installation and to examine completed installations.
- 19.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 20.1 The manufacture of the membranes has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 20.2 The quality management system of the membranes manufacturer has been assessed and found to be satisfactory.
- 20.3 The quality of supply of the membrane system materials to the market is the responsibility of MBP [NZ] Ltd.
- 20.4 Quality on-site is the responsibility of the MBP [NZ] Ltd trained applicators.
- 20.5 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing systems and substrates.
- 20.6 Building owners are responsible for the maintenance of the trafficable floor finish in accordance with the instructions of MBP [NZ] Ltd.

Sources of Information

- AS 3958.1:2007 Guide to the installation of ceramic tiles.
- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 2908.2:2000 Cellulose-cement products – Flat sheet.
- AS/NZS 2269:2012 Plywood-Structural.
- AS/NZS 4858:2004 Wet area membranes.
- BRANZ Good Practice Guide: Tiling, April 2015.
- DIN 53504 May 1994 Determination of tensile stress/strain properties of rubber.
- EN 1348: 1997/A1 Adhesives for tiles – Determination of tensile adhesion strength for cementitious adhesives.
- EN 14891 March 2003 Liquid applied waterproofing membranes for use beneath ceramic tiling – Definitions, specifications and test methods.
- NZS 3101:2006 The design of concrete structures.
- NZS 3602:2003 Timber and wood-based products for use in buildings.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4229:2013 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230:2004 Code of Practice for the design of masonry structures.
- UNI 8202 – 22: 1987 Building. Water proof sheets. Determination of behaviour in water.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 25 February 2021

This Appraisal has been amended to update the Appraisal holder.

Amendment No. 2, dated 06 October 2022

This Appraisal has been amended to include trafficable floors and to remove Mapelastastic Turbo.



BRANZ Appraised
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Appraisal No. 484 [2018]
09 February 2018

MAPEGUM WPS, MAPELASTIC,
MAPELASTIC SMART AND MAPELASTIC
AQUADEFENSE WET AREA MEMBRANES



In the opinion of BRANZ, **Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic Aquadefense Wet Area Membranes** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **MBP [NZ] Ltd**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **MBP [NZ] Ltd**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions;
 - d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **MBP [NZ] Ltd**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **MBP [NZ] Ltd** or any third party.

For BRANZ

A handwritten signature in blue ink, appearing to read 'Chelydra Percy'.

Chelydra Percy

Chief Executive

Date of Issue:

09 February 2018

Mapelastic Aquadefense

Building Product Information Requirements Compliance Statement

Date: 09/10/23 (version 1)

Product name: **Mapelastic Aquadefense**

Product identifier: **Mapelastic Aquadefense**

Product Line

Mapelastic Aquadefense is a ready to use, ultra quick drying, flexible liquid membrane for internal waterproofing applications.

Product Description

Mapelastic Aquadefense is a single part ready to use liquid waterproofing membrane for internal wet areas, bathrooms, showers and damp environments in general underneath stone, ceramic or mosaic tile finishes. The Mapelastic Aquadefense must be covered by a suitable trafficable floor covering to protect it from UV exposure.

Note: Mapelastic Aquadefense is not BRANZ appraised for exterior applications.

The membranes can be applied over:

- concrete
- cement screeds and screeds made using special binders supplied by MBP (NZ) Limited
- plaster board (internal)
- cement board, tile & slate underlay, and compressed sheet.

MBP (NZ) Ltd.

Exclusive distributor of Mapei products in New Zealand
88 Carbine Road, Mt Wellington, Auckland 1060, New Zealand
T. +64 99211994 | F. +64 99211993 | www.mbpnz.co.nz

WE SUPPLY THE FOLLOWING MAPEI GROUP BRANDS AND SYSTEMS:



Mapelastic Aquadefense is supplied as a

- 15kg rectangular bucket.
- Colour: light blue

There are several ancillary products used with Mapelastic Aquadefense

- Mapeband SA – self-adhesive butyl rubber tape- used to reinforce all joints.
- Mapeband Easy – range of detailing bands for floor / wall junctions
- Mapetex Sel – nonwoven fabric re- enforcement
- Mapei Primer 3296 – an acrylic primer for non-absorbent surfaces
- Ecoprim Grip PLUS – primer for non-porous substrates.

For a complete range of suitable primers and adhesives please refer to

Mapelastic Aquadefence technical references:

- Mapelastic Aquadefense – Technical datasheet (2103-11-2016-GB)
- BRANZ appraisal 484

Or request support at

www.mapei.com/nz/en/technical-and-commercial-support

Relevant Building Code Clauses

The following clauses of the New Zealand Building Code are relevant to Mapelastic Aquadefense.

Clause B2 Durability: Performance B2.3.1(B) 15 years. Mapelastic Aquadefense meets this requirement.

Clause E3 Internal Moisture: Performance E3.3.6 Interior wet area floors and walls. Mapelastic Aquadefense meets this requirement.

Clause F2 Hazardous Building Materials: Performance F2.2.3.1 Mapelastic Aquadefense meets this requirement.

Compliance with these clauses is confirmed in BRANZ appraisal 484

Scope and Design Requirements

Mapelastic Aquadefense can be used as a waterproofing system for internal applications within the following scope:

- Mapelastic Aquadefense may be used on interior substrates of concrete, fibre cement compressed sheet, fibre cement sheet underlay. Caution must be used when using with flooring grade plywood
- Applied Mapelastic Aquadefense must be protected from physical damage by traffic floor finishes.
- Movement and control joints must be carried through the membrane and trafficable floor finish.
- The design of and the construction of the substrate and movement and control joints are specific to each building and is there for the responsibility of the building designer and building contractor.
- Mapelastic Aquadefense must not be left exposed.

Conditions and Limitations of Use

Installation of the membrane must always be completed by trained applicators approved by MBP (NZ) Ltd.

Installation of substrates must always be carried out in accordance with the Mapelastic Aquadefense technical literature and under the supervision of a Licensed Building Practitioner (LBP) with the relevant license class.

Supporting Documentation

The following additional documentation supports the above statements:

Mapelastic Aquadefense BRANZ 484 (Certification)

<https://www.mapei.com/nz/en/products-and-solutions/products/detail/mapelastic-aquadefense>

Mapelastic Aquadefense - data sheet (2103-11-2016-GB)

<https://www.mapei.com/nz/en/products-and-solutions/products/detail/mapelastic-aquadefense>

Contact Details

Manufacture location

Mapei SpA

Via Cafiero, 22, 20158

Milano, Italy

Tel +39 023 76731

mapei@mapei.it

www.mapei.it

Importer NZ Address for Service

MBP (NZ) Ltd

88 Carbine Road

Auckland 1060

Tel 09 921 1994

www.mbpltd.co.nz

enquiries@mbpltd.co.nz

Importer NZBN: 8080877

Warnings and Bans

Mapelastic Aquadefense is not subject to a warning or ban under section 26 of the Building Act 2004.

Version History

Version number	Written by	Checked by	Date issued	Changes from previous version
V1 09/10/2023	JP	PT	10/10/2023	New document



R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	AJ Sexton	Lab No:	3379186	DWAPV1
Contact:	AJ Sexton 487 Mairaki Road RD 1 Rangiora 7471	Date Received:	05-Oct-2023	
		Date Reported:	11-Oct-2023	
		Quote No:		
		Order No:	Sexton D8	
		Client Reference:	Oct 2023	
		Submitted By:	AJ Sexton	

Sample Type: Drinking Water for DWSNZ Compliance

Sample Name:		MAI007 - M35/4989 05-Oct-2023 7:00 am	Aesthetic Values	Maximum Acceptable Values (MAV)
Lab Number:		3379186.1		
Routine Water + E.coli profile Kit				
Escherichia coli	MPN / 100mL	< 1	-	< 1
Routine Water Profile				
Turbidity	NTU	< 0.05	≤ 5	-
pH	pH Units	7.9	7.0 - 8.5	-
Total Alkalinity	g/m ³ as CaCO ₃	88	-	-
Free Carbon Dioxide	g/m ³ at 25°C	2.1	-	-
Total Hardness	g/m ³ as CaCO ₃	73	≤ 200	-
Electrical Conductivity (EC)	mS/m	20.8	-	-
Electrical Conductivity (EC)	µS/cm	208	-	-
Approx Total Dissolved Salts	g/m ³	139	≤ 1000	-
Total Arsenic	g/m ³	< 0.0011	-	0.01
Total Boron	g/m ³	0.0193	-	2.4
Total Calcium	g/m ³	21	-	-
Total Copper	g/m ³	0.00104	≤ 1	2
Total Iron	g/m ³	0.023	≤ 0.3	-
Total Lead	g/m ³	0.0019	-	0.01
Total Magnesium	g/m ³	5.2	-	-
Total Manganese	g/m ³	< 0.00053	≤ 0.04 (Staining) ≤ 0.10 (Taste)	0.4
Total Potassium	g/m ³	0.98	-	-
Total Sodium	g/m ³	14.5	≤ 200	-
Total Zinc	g/m ³	0.0018	≤ 1.5	-
Chloride	g/m ³	9.5	≤ 250	-
Nitrate-N	g/m ³	0.37	-	11.3
Sulphate	g/m ³	1.9	≤ 250	-

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance
with the Building Act 2004, class 2023 and the Building
Regulations 1992, Clause 3
BC240589 22/08/2024 Chris

Note: The Maximum Acceptable Values (MAV) are taken from the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022', published under the authority of the New Zealand Government-2022. Copies of this publication are available from: <https://www.legislation.govt.nz/regulation/public/2022/0168/latest/whole.html>

The standards set limits for the concentration of determinands in drinking water. The Maximum Acceptable Values (MAVs) for any determinand must not be exceeded at any time.

The Aesthetic Values are taken the publication, 'Aesthetic Values for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai"). Aesthetic values specify or provide minimum or maximum values for substances and other characteristics that relate to the acceptability of drinking water to consumers (such as appearance, taste or odour).

Note that the units: g/m³ are the same as mg/L and ppm.



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Routine Water Assessment for Sample No 3379186.1 - MAI007 - M35/4989 05-Oct-2023**pH/Alkalinity and Corrosiveness Assessment**

The pH of a water sample is a measure of its acidity or basicity. Waters with a low pH can be corrosive and those with a high pH can promote scale formation in pipes and hot water cylinders.

The guideline level for pH in drinking water is 7.0-8.5. Below this range the water will be corrosive and may cause problems with disinfection if such treatment is used.

The alkalinity of a water is a measure of its acid neutralising capacity and is usually related to the concentration of carbonate, bicarbonate and hydroxide. Low alkalinities (25 g/m^3) promote corrosion and high alkalinities can cause problems with scale formation in metal pipes and tanks.

The pH of this water is within the NZ Drinking Water Guidelines, the ideal range being 7.0 to 8.0. With the pH and alkalinity levels found, it is unlikely this water will be corrosive towards metal piping and fixtures.

Hardness/Total Dissolved Salts Assessment

The water contains a low amount of dissolved solids and would be regarded as being slightly hard.

Nitrate Assessment

Nitrate-nitrogen at elevated levels is considered undesirable in natural waters as this element can cause a health disorder called methaemaglobinaemia. Very young infants (less than six months old) are especially vulnerable. The 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022' sets a maximum permissible level of 11.3 g/m^3 as Nitrate-nitrogen (50 g/m^3 as Nitrate).

Nitrate-nitrogen was detected in this water but at such a low level to not be of concern.

Boron Assessment

Boron may be present in natural waters and if present at high concentrations can be toxic to plants.

Boron was found at a low level in this water but would not give any cause for concern.

Metals Assessment

Iron and manganese are two problem elements that commonly occur in natural waters. These elements may cause unsightly stains and produce a brown/black precipitate. Iron is not toxic but manganese, at concentrations above 0.5 g/m^3 , may adversely affect health. At concentrations below this it may cause stains on clothing and sanitary ware.

Neither element was detected in this water, which is a pleasing feature.

Treatment to remove iron and/or manganese should not be necessary.

Bacteriological Tests

The Drinking Water Standards for NZ state that there should be no Escherichia coli (E coli) in water used for human consumption. The presence of these organisms would indicate that other pathogens of faecal origin may be present. Results obtained for Total Coliforms are only significant if the sample has not also been tested for E coli.

Escherichia coli was not detected in this sample.

Final Assessment

All parameters tested for meet the guidelines laid down in the 'Water Services (Drinking Water Standards for New Zealand) Regulations 2022' and the 'Aesthetic Values for Drinking Water Notice 2022' issued by the Water Services Regulator ("Taumata Arowai") for water which is suitable for drinking purposes.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Drinking Water for DWSNZ Compliance			
Test	Method Description	Default Detection Limit	Sample No
Routine Water Profile		-	1
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter. Performed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch.	-	1
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) : Online Edition.	-	1
Turbidity	Analysis by Turbidity meter. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2130 B (modified) : Online Edition.	0.05 NTU	1
pH	pH meter. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 4500-H ⁺ B (modified) : Online Edition. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used.	0.1 pH Units	1
Total Alkalinity	Titration to pH 4.5 (M-alkalinity), autotitrator. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2320 B (modified for Alkalinity <20) : Online Edition.	1.0 g/m ³ as CaCO ₃	1
Free Carbon Dioxide	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D : Online Edition.	1.0 g/m ³ at 25°C	1
Total Hardness	Calculation from Calcium and Magnesium. APHA 2340 B : Online Edition.	1.0 g/m ³ as CaCO ₃	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2510 B : Online Edition.	0.1 mS/m	1
Electrical Conductivity (EC)	Conductivity meter, 25°C. APHA 2510 B : Online Edition.	1 µS/cm	1
Approx Total Dissolved Salts	Calculation: from Electrical Conductivity.	2 g/m ³	1
Total Arsenic	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition / US EPA 200.8.	0.0011 g/m ³	1
Total Boron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.0053 g/m ³	1
Total Calcium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m ³	1
Total Copper	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition / US EPA 200.8.	0.00053 g/m ³	1
Total Iron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m ³	1
Total Lead	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition / US EPA 200.8.	0.00011 g/m ³	1
Total Magnesium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m ³	1
Total Manganese	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition / US EPA 200.8.	0.00053 g/m ³	1
Total Potassium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.053 g/m ³	1
Total Sodium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.021 g/m ³	1
Total Zinc	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B : Online Edition / US EPA 200.8.	0.0011 g/m ³	1
Chloride	Filtered sample from Christchurch. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.5 g/m ³	1
Nitrate-N	Filtered sample from Christchurch. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.05 g/m ³	1
Sulphate	Filtered sample from Christchurch. Ion Chromatography. APHA 4110 B (modified) : Online Edition.	0.5 g/m ³	1
Escherichia coli	MPN count using Colilert 18 (Incubated at 35°C for 18 hours) and 97 wells. Analysed at Hill Laboratories - Microbiology; 101c Waterloo Road, Hornby, Christchurch. APHA 9223 B : Online Edition.	1 MPN / 100mL	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 05-Oct-2023 and 11-Oct-2023. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Ara Heron BSc (Tech)
Client Services Manager - Environmental