



BRANZ Appraised

Appraisal No. 636 [2019]

PRIMA CERAMIC TILE UNDERLAY™

Appraisal No. 636 [2019]

This Appraisal replaces BRANZ Appraisal No. 636 [2008]



BRANZ Appraisals

Technical Assessments of products for building and construction.

Manufactured by



Hume Cemboard Industries Sdn Bhd

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Marketed by



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Product

- 1.1 PRIMA Ceramic Tile Underlay™ is a fibre cement sheet underlay for use with tile systems on new and existing timber, or reconstituted wood-based material floors, [e.g. plywood and particleboard].

Scope

- 2.1 PRIMA Ceramic Tile Underlay™ has been appraised for use as a tile substrate fixed over new or existing timber or reconstituted wood-based material floors to provide a flat, even surface for the direct adhesion of ceramic and other floor tiles, or as a base for waterproof membranes and screeds.

Building Regulations

New Zealand Building Code [NZBC]

- 3.1 In the opinion of BRANZ, PRIMA Ceramic Tile Underlay™ 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. PRIMA Ceramic Tile Underlay™ meets these requirements. See Paragraph 9.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. PRIMA Ceramic Tile Underlay™ meets this requirement and will not present a health hazard to people.



Technical Specification

4.1 System components and accessories for PRIMA Ceramic Tile Underlay™, which are supplied by Independent Building Supplies Ltd are:

PRIMA Ceramic Tile Underlay™ Sheet

- PRIMA Ceramic Tile Underlay™ is 6.0 mm thick fibre cement sheet, with square edges and is available in sizes of 1200 mm wide by 1800 mm long, and 900 mm wide by 1800 mm long.
- PRIMA Ceramic Tile Underlay™ sheets are manufactured to conform to the requirements of AS/NZS 2908.2. The sheets are grey in colour and have a nailing pattern printed on them.

4.2 Accessories used with PRIMA Ceramic Tile Underlay™ which are supplied by the building contractor are:

- **PRIMA Ceramic Tile Underlay™ sheet fixings** - 25 x 2.5 mm hot-dip galvanised flat head annular grooved underlay nails. *[Note: Hot-dip galvanising must comply with AS/NZS 4680.]*
- **Adhesive** - fibre cement compatible construction adhesive to assist in the adhesion of PRIMA Ceramic Tile Underlay™ sheets to particleboard and plywood floors.

Handling and Storage

5.1 Handling and storage of all materials supplied by Independent Building Supplies or the building contractor, whether on site or off site, is under the control of the building contractor. PRIMA Ceramic Tile Underlay™ sheets must be stacked flat, off the ground and supported on a level platform. They must be kept dry at all times either by storing under cover or by providing waterproof covers to the stack. Care must be taken to avoid damage to edges, ends and surfaces. The sheets must always be carried on edge.

5.2 Other accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for PRIMA Ceramic Tile Underlay™. The Technical Literature must be read in conjunction with this Appraisal. 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 PRIMA Ceramic Tile Underlay™ is designed as a tile substrate fixed over new or existing timber or reconstituted wood-based material floors to provide a flat, even surface for the direct adhesion of ceramic or other floor tiles. Where a waterproofing membrane is specified for wet areas, PRIMA Ceramic Tile Underlay™ is suitable for use as a base for the waterproof membrane and screeds.

7.2 Once fixed in place, tiles may be directly adhered to the product and grouted to provide an impervious and easily cleaned surface. Alternatively, a waterproof membrane or screed may be installed over the sheets, with the tiles adhered to the membrane or screed. The screed may be set to provide falls in the floor to a floor waste outlet.



Structure

- 8.1 For best results it is essential that the floor structure is sound and not 'springy'. Any movement in the floor after tiling will cause the tile joints to move and crack, thus allowing moisture and dirt to penetrate the tile surface. Although flexible adhesives must be used to adhere the tiles to the substrate, they must not be used to accommodate deflection beyond the limits of this Appraisal.
- 8.2 Timber framing systems must comply with NZS 3604, with joist spans reduced by approximately 20% of those set out in NZS 3604, or timber and steel framing systems to a specific engineering design complying with the NZBC.
- 8.3 All floors, new and existing, will be structurally suitable for tiling when the maximum deflection of the floor joists is 1/360th of the span.
- 8.4 Tiling must not be carried out until the flooring and timber framing is dry enough to ensure the majority of the shrinkage has occurred. Generally this will require timber moisture content of between 12 and 14% in air-conditioned spaces, and between 16 and 18% for other spaces, when tiles are laid. For new timber framed floors, the use of kiln-dried framing is strongly recommended.

Durability

Serviceable Life

- 9.1 Where PRIMA Ceramic Tile Underlay™ is used as a base for waterproof membranes, it will be durable for at least 15 years, provided the tiling and waterproofing systems are maintained to ensure the underlay and fixings remain dry in service. With diligent maintenance of the tiling system, the underlay sheets are expected to have a serviceable life compatible with ceramic or stone tiling systems with a design service life of 15 - 25 years. Tiles, adhesives, grouts, waterproofing membranes and the like have not been assessed and are outside the scope of this Appraisal.

Maintenance

- 10.1 No maintenance of the PRIMA Ceramic Tile Underlay™ will be required provided significant substrate movement does not occur and the tile finish remains intact. Regular checks must be made of the tiled areas to ensure they are sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiles, grouts and sealants.

Prevention of Fire Occurring

- 11.1 PRIMA Ceramic Tile Underlay™ sheet is considered a non-combustible material and need not be separated from heat sources such as fire places, heating appliances, flues and chimneys. However, when used in conjunction with, or attached to heat sensitive materials, the heat sensitive material must be separated from fireplaces, heating appliances, flues and chimneys in accordance with the requirements of Part 7 of NZBC Acceptable Solutions C/AS1 - C/AS6 and NZBC Verification Method C/VM1.
- 11.2 Although PRIMA Ceramic Tile Underlay™ sheet is considered a non-combustible material, it must not be used as a barrier for the protection of the timber or reconstituted wood-based flooring material from sources of heat, such as may be expected from solid fuel burning appliances and the like.
- 11.3 Protection of the heat sensitive flooring from heat sources must be provided as required by the NZBC. Compliance methods which may be used are as set out in NZBC Acceptable Solutions C/AS1 - C/AS6, Part 7.

Internal Moisture

- 12.1 PRIMA Ceramic Tile Underlay™ is suitable for use with waterproofing membranes in wet areas. Design guidance on waterproofing wet areas can be obtained from AS 3740, the 'BRANZ Good Practice Guide to Tiling', and waterproofing membrane system manufacturers.
- 12.2 Waterproofing membrane systems have not been assessed and are therefore outside the scope of this Appraisal.



Control Joints

- 13.1 Movement control joints must be provided in the following situations:
- to coincide with any existing structural movement control joints in the floor structure; and,
 - at maximum 5.0 m centres in any direction; and,
 - across any doorways or openings where tiling is carried through; and,
 - to coincide with changes of direction in the floor such as will occur in 'L' shaped rooms; and,
 - around the perimeter of the tiled area where it abuts another material or surface.
- 13.2 Control joints should be spaced towards the centre of the floor if possible, so that an equal amount of floor is each side of the joint.
- 13.3 For guidance on all aspects of control joint detailing and construction refer to the 'BRANZ Good Practice Guide to Tiling'.

Subfloor Ventilation

- 14.1 As the underlay and tile system will effectively seal the top surface of the floor, it is essential that the underside of the floor is dry and well ventilated. Excessive moisture in the subfloor space can lead to the flooring rotting, or similar problems with timber floor framing, and corrosion of steel floor framing. Anything that causes significant variation in moisture content of the flooring or supporting structure will cause excessive movement, and result in unsatisfactory performance of the underlay and tile system.

Installation Information

Installation Skill Level Requirements

- 15.1 Installation must always be carried out in accordance with the PRIMA Ceramic Tile Underlay™ Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

General

- 16.1 PRIMA Ceramic Tile Underlay™ sheets must be dry when fixed in place and the timber floor and timber framing must not exceed the moisture content as set out in this Appraisal [see Section 8.4].

Preparation

- 17.1 Existing floor coverings must be removed before the underlay sheets are installed, and the floor must be substantially flat. If any floorboards are cupped, misaligned or warped, the whole floor must be coarse-sanded. The floor must be free of dirt, dust, grease and the like before installing PRIMA Ceramic Tile Underlay™ sheets.
- 17.2 Loose flooring must be re-nailed, and damaged, rotten, or unsound flooring or floor framing must be replaced.

Cutting Sheets

- 18.1 PRIMA Ceramic Tile Underlay™ sheets may be cut by scoring and snapping, hand guillotine, hand or power saw. Use of power saws is not recommended unless dust collection devices or dust masks are used because of the amount of dust generated.
- 18.2 Holes and cut-outs may be formed by drilling a series of holes around the perimeter of the opening required, and tapping the centre out with a hammer.



Sheet Layout

- 19.1 Time spent on planning the sheet layout will generally save on sheet cutting and wastage. Sheets may be loosely laid out on the floor to 'mimic' the actual location of sheets and show where cuts and joints will be made. Adjustments can then be made to optimise the layout and sheet usage before finalising any cutting pattern. Alternatively, for larger or more complex areas, a scaled layout plan is recommended.
- 19.2 Adjustments should be made to the sheet layout plan to accommodate the following:
- PRIMA Ceramic Tile Underlay™ sheets must be laid in a staggered or brick pattern perpendicular to the direction of floorboards, and sheet end joints must not coincide with floorboard joints; and,
 - any control or construction joints; and,
 - a 3 mm gap must be left at all walls and other vertical projections in the floor; and,
 - except at control joints, the sheet joints must be butted together.

Fixing Sheets

- 20.1 PRIMA Ceramic Tile Underlay™ sheets may be fixed to strip floors with nails only, but for wood-based flooring, construction adhesive must be used as well as nails. The construction adhesive must be a type recommended by the adhesive manufacturer as suitable for fixing fibre cement sheet to timber or wood-based flooring. Construction adhesives have not been assessed and are outside the scope of this Appraisal.
- 20.2 Construction adhesive, if used, must be spread onto the back of the underlay sheet with a 3 mm notched trowel, paying particular attention to the sheet edges.
- 20.3 All sheets must be fastened with 25 x 2.5 mm annular grooved underlay nails at 150 mm maximum centres to the body of the sheet and at 75 mm maximum centres to the sheet edges. The sheet has a nailing pattern printed on it to assist. Nailing must start at the centre of the sheet and work outwards to ensure sheets finish flat and tight with the flooring. Nails must be a minimum of 50 mm from sheet corners, and minimum of 12 mm from sheet edges.

Tiling

- 21.1 Before tiling commences, waterproof membranes, screeds to form falls, and floor waste outlets, where required, must be installed. Waterproof membranes and waste outlets must be installed in accordance with the respective manufacturer's instructions. Screeds may be constructed as set out in the 'BRANZ Good Practice Guide to Tiling'.
- 21.2 Tiling must be carried out using a flexible tile adhesive in accordance with the tile adhesive manufacturer's instructions. The underlay sheets may, when recommended by the tile adhesive manufacturer, require priming before tiles are directly adhered.
- 21.3 Where movement control joints occur, they should be used as starting points for tiling.
- 21.4 For guidance on all aspects of tiling and tile systems refer to the 'BRANZ Good Practice Guide to Tiling'.

Inspections

- 22.1 The Technical Literature must be referred to during the inspection of PRIMA Ceramic Tile Underlay™ installations.

Health and Safety

- 23.1 Safe use and handling procedures for the components that make up the PRIMA Ceramic Tile Underlay™ system are provided in the relevant manufacturer's Technical Literature.
- 23.2 Cutting of PRIMA Ceramic Tile Underlay™ sheets must be carried out in well ventilated areas, and a dust mask and eye protection must be worn. When power tools are used for cutting, grinding or forming holes, safety measures as set out in the Technical Literature must be undertaken because of the amount of dust generated.

Basis of Appraisal

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

Tests

24.1 Testing of new and carbonated, fungal cellared and naturally weathered PRIMA Ceramic Tile Underlay™ sheet has been undertaken by BRANZ in accordance with AS/NZS 2908.2:1992 Cellulose cement products - Flat sheets. BRANZ experts have evaluated the test results in forming a durability opinion on the product.

Other Investigations

25.1 A durability opinion has been given by BRANZ technical experts.

25.2 The practicability of installation has been assessed by BRANZ.

25.3 The Technical Literature for PRIMA Ceramic Tile Underlay™ has been examined by BRANZ and found to be satisfactory.

Quality

26.1 The manufacture of PRIMA Ceramic Tile Underlay™ sheet 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.

26.2 The quality management system of the PRIMA Ceramic Tile Underlay™ sheet manufacturer, Hume Cemboard Industries Sdn Bhd, has been assessed and registered as meeting the requirements of ISO 9001: 2015 by SIRIM QAS International Sdn Bhd.

26.3 Quality of installation on site of components and accessories supplied by Independent Building Supplies and the building contractor is the responsibility of the installer.

26.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing and floor systems and PRIMA Ceramic Tile Underlay™ sheets in accordance with the instructions of Hume Cemboard Industries Sdn Bhd.

26.5 Building owners are responsible for the maintenance of the tile system to ensure it is sound and will not allow moisture to penetrate.

Sources of Information

- AS 3740: 2010 Waterproofing of domestic wet areas.
- AS/NZS 1170: 2002 Structural design action - General principles.
- AS/NZS 2908.2: 2000 Cellulose-cement products - Flat Sheet.
- AS/NZS 2918: 2001 Domestic solid fuel burning appliances - Installation
- AS/NZS 4680: 2006 Hot-dip galvanised (zinc) coatings on fabricated ferrous articles
- NZS 3604: 2011 Timber-framed buildings.
- Good Practice Guide: Tiling, BRANZ, 2015.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



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PRIMA CERAMIC TILE
UNDERLAY™



BRANZ

In the opinion of BRANZ, **PRIMA Ceramic Tile Underlay™** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Hume Cemboard Industries Sdn Bhd**, 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. **Hume Cemboard Industries Sdn Bhd**:
 - 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 **Hume Cemboard Industries Sdn Bhd**.
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 **Hume Cemboard Industries Sdn Bhd** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

23 May 2019