BEAL Product Technical Statement

PTS 2523

EXPIRY DATE: 31 July 2027

The Magnum Board Rigid Air Barrier System



Product Description

1.1 **The Magnum Board Rigid Air Barrier (MBRAB) system is a mineral sheet-based 'rigid air barrier' to be used over timber framing or light gauge steel framing for use in wind speeds up to and including 63m/sec. The MBRAB is designed to provide seamless water-proofing, moisture-permeability and wind penetration resistance through framing in high wind environments.**

1.2 The system consists of 9mm Magnum Board sheets using specified nail fixings together with Thermakraft tapes, that provides an easy to install, reliable barrier to moisture and the passage of air.

1.3 The MBRAB system is to be installed by tradespersons under the supervision of a suitably experienced and skilled tradesperson, as described in the certificate-holder's technical literature.

Compliance With The National Construction Code

2.1 In the opinion of BEAL*, the Magnum Board Rigid Air Barrier (MBRAB) system, when designed, installed and used in accordance with the statements and conditions of this Certificate, will meet the following provisions of the NCC Volume Two of the Building Code of Australia:

Part H1P1 Structure
The MBRAB meets the requirements of Performance H1P1 Structural reliability and resistance (1), (2)(a), (b), (c), (d), (l), (n) and (o), (3). (Refer para 8.1)
Part H2P1 Damp and weatherproofing
The MBRAB meets the requirements of Performance H2. (Refer para 8.2)
Part H6P1 & P2 Energy Efficiency
The MBRAB meets the requirements of Performance H6. (Refer para 8.3)

2.2 The Magnum Board Rigid Air Barrier System has been appraised as a Compliance Solution in terms of compliance with NCC Volumes One and Two. Evidence of how compliance is achieved is described under Sources of Information. (Page 4)

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Scope and Limitations

3.1 The MBRAB system has been appraised for use as a rigid air barrier with bracing capacity for use behind cladding systems within the following scope:
Attached directly to new and existing timber conforming to AS1684 and/or light gauge steel framing conforming to the NASH standard, designed and constructed to comply with the requirements of the NCC Volume Two;
3.2 The MBRAB system shall be installed only by supervision of a suitably experienced and skilled tradesperson;
3.2 The MBRAB is suited to the construction of Class 1a and Class 10a buildings at a height of no greater than 10m, at least 1 meter from any boundary, in non-cyclonic Wind Zones 1 to 3 .

Limitations

3.3 The MBRAB is required to be designed and installed according to the details and drawings described in the technical manual.
3.4 The design and construction of the slab on ground concrete floor is the responsibility of the owner/building designer and are outside the scope of this Product Technical Statement.

Technical Literature

4.1 The MBRAB system Technical Manual v5.1 (incorporating the use of Thermakraft tapes) must be read in conjunction with this appraisal. All aspects of design, use, installation contained within the Technical Manual and scope of this Appraisal Certificate must be followed.
4.2 For a copy of this technical literature and any subsequent updates, please refer to www.healthbasedbuilding.com

Technical Details

5.1 The product is suited for construction over a properly designed concrete floor that is in compliance with NCC Volume 2 and the project specification, taking into account the local wind zone.
Materials and accessories which are used with the MBRAB system are as follows:

- **MBRAB**

MBRAB is a proprietary white magnesium oxide (MgO) mineral board with a number of attributes including minimal moisture absorption. It is supplied in the following sizes (9mm thick): 2.4m x 1.2m, 2.7m x 1.2m, and 3.0m x 1.2m.

- **Thermakraft tapes**

The Thermakraft tape system is comprised of two tapes suited for use with the Magnum Board:
a) Thermakraft 'Thermaflash' for sealing to window openings, and,
b) Thermakraft 'Premium Joining Tape' for sealing joins between Magnum Boards.

- **SIFCO Fixings** (Cat#:FRP50V8SS/8)

The SIFCO coil wire-collated Nail is a 50 x 2.8mm Stainless Steel Flat head nail with annular groove shank that can be obtained in collated form for use with the SIFCO FCN90LB-ST Coil Nailer gun. Nails are available in boxes of 3,600.

- **ECKO Fixings**

The ECKO HAMMAHAND Round Head Coil Nails are 50 x 2.8mm Stainless Steel Flat head nails with annular groove shank that can be obtained in collated form for use with the ECKO WB75 Weatherboard Nailer. Nails are available in boxes of 3,000, cat HHSS-50V8R.
5.2 Refer to the MBRAB Technical Manual for the required method of installation of these nails.

Handling and Storage

5.3 All products must be stored inside in a well ventilated area, up off concrete floors, kept dry, out of direct sunlight and away from freezing conditions. The Thermakraft Tape products, in the original packaging, have a shelf life of 12 months from date of manufacture.

Advice for designers

General

6.1 The MBRAB system is for use on new and existing timber framing, or for installation over light gauge steel framing, to provide a wind and moisture resistant barrier when the building is situated in high to extra high wind zones.
6.2 The system is designed to comply with performance Part H1 Structure.
6.3 Before an installation can be carried out, it is essential that a survey of the framing be carried out to ensure compliance with AS1684 and/or light gauge steel framing conforming to the NASH standard, and that the stud and dwang centres meet the requirements set out in the MBRAB Technical Manual.

Penetrations

6.4 The installation of the MBRAB system is reliant on all openings and penetrations being constructed in accordance with the requirements set out in the Technical Manual.

Part H1P1 Structure -

6.5 The MBRAB system, when used in accordance with this Appraisal Certificate and subjected to normal conditions of environment and use, is expected to tolerate wind speeds of up to and including 63m/sec (approx.2.4kPa).

Part H2 Damp and weatherproofing -

The installation of the MBRAB system is reliant on the correct application of the Thermakraft tape system to meet the requirements of this performance clause.
6.6 The design of details not included within the Technical Manual are subject to specific design and are outside the scope of this Appraisal Certificate.

Part H6P1 Energy Efficiency -

6.7 The MBRAB system, when designed and installed in accordance with this Product Technical Statement will contribute to a building meeting the performance of Part H6 Energy Efficiency.

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Installation Requirements

Installation Skill Requirement

7.1 Installation of the MBRAB sheets and Thermakraft tape system products must be completed by suitably experienced tradespersons, under the supervision of a Licensed Building Practitioner, preferably by those who have experience in the installation of Rigid Air Barriers.

Preparation of Timber Framing

7.2 The moisture content of any new timber framing must be no higher than 18%.

Fixing Spacings

7.3 The table below specifies the spacings between fixings depending on stud spacings and Wind Pressure:

Spacing of 2.8 mm x 50 mm annular grooved nails through 9 mm Magnum Board to SG8 timber studs

Fixing spacing in mm

ULS Wind Pressure	Stud spacing	
q (kPa)	0.6 m	0.3 m
1.0	300	300
1.5	300	300
2.0	250	300
2.5	200	300
3.0	150	300
3.5	125	275
4.0	125	250
4.5	100	225
5.0	100	200
5.5	75	175
6.0	75	150
6.5	75	150
7.0	50	125

Thermakraft Tape Application

7.4 The application of the Thermakraft tape system must not be undertaken when the substrate temperature is below 10°C.

Health and Safety

7.5 The safe use and handling of the Magnum Board and Thermakraft tape system products are described in the technical literature. These products must be used in conjunction with the relevant material safety data sheet for each product.

Warranty Requirement

7.6 No warranty will be made available to the building owner until the relevant Site Checklists, available using the QR Code, have been completed and forwarded to the certificate-holder or their agent.

Basis of this Product Technical Statement

BEAL have made use of the compliance verification procedure to demonstrate compliance with the relevant clauses of Volume 2 of the NCC, based on a risk analysis procedure. The following is a summary of the technical investigations carried out:

Compliance with Part H1P1 Structure

8.1 The following testing was carried out to assess the structural performances and characteristics of the MBRAB:

- Suitability of the specified fixings and their layout to suit the intended scope of use wind speeds

Compliance with Part H2P1 Damp & Weatherproofing

8.2 The following testing was carried out:

- The tape adhesion to the Magnum Board before and after accelerated age conditioning,
- Weathertightness based on testing based on AS/NZS4284:2008 Testing Building Facades, to suit.

A contribution to compliance with Part H6P1 & P2 Energy Efficiency

8.3 The use of tapes to seal the joins and exterior perimeter of the MBRAB ensures a high degree of airtightness which is a basic contribution to energy efficiency by design.

Other Investigations

8.4 The installation of the MBRAB was also evaluated (including site visits) in practical building situations assessing the following;

- Ease of installation
- Potential risks of non-performance when being
- Constructed on site
- Any external factors that could affect the quality of the constructed product.

Technical Literature Assessment

8.5 The Technical Literature has been examined by BEAL and found to be satisfactory.

Quality

8.6 The quality of materials, components and accessories supplied by Health Based Building Ltd. is managed through the use of a 'Product Quality Plan', which is reviewed and audited on an annual basis.

8.7 Building owners are responsible for any maintenance of the MBRAB should it arise in accordance with the manufacturer's instructions and this Product Technical Statement.

Sources of Information

- The Building Code of Australia
- Volume 2 of the National Construction Code (NCC) including section A5.2 Evidence of suitability
- NASH Standard: Residential and Low-rise Steel Framing Part 1: Design Criteria
- AS/NZS1170.0:2002 and AS/NZS1170.2:2021- Part 2: Wind actions
- ICC-AC386 – Acceptance Criteria for Fibre-reinforced Magnesium-oxide Based Sheets.
- Test data and technical literature supplied by the Magnum Board manufacturer in the USA. This includes the test report from ICC-Evaluation Service (equivalent to BRANZ) using the ICC-AC386 - 'ACCEPTANCE CRITERIA FOR FIBER-REINFORCED MAGNESIUM-OXIDE-BASED SHEETS' originally issued 1 July 2015 and updated since.
- Letter concerning 50-year durability from Thompson Global Partners LLC dated 27 August 2018.

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- Test Reports from BEAL:
  TR140712-1 Weathertightness (using Blue Barrier)
- TR140723-1 Nail shear strength
- TR250122-1 Fixing pull-through resistance
- TR140725-2 Staged fixing shear resistance
- TR140805-1 Cyclic shear performance of a fixing
- TR140807-1 Nail & Adhesive Shear Resistance
- TR220218-1&2; 180 Peel Adhesion Test of 2 Thermakraft Tapes (High Adhesion Flashing Tape and Premium Jointing Tape in place of the use of the Blue Barrier system, having the same weathertightness effect).
- Fixing capacity testing was also peer reviewed by a Chartered Structural Engineer.

Concluding statement

9.1 In the opinion of BEAL, the MBRAB is fit for purpose and will comply with Volume 2 of the NCC to the extent specified provided that it is used, designed, installed and maintained in accordance with the manufacturer's instructions and this Product Technical Statement Certificate.

9.2 This Product Technical Statement Certificate is issued only to Health Based Building Ltd., and is valid until further notification, subject to the conditions of this Product Technical Statement.

Conditions of this Product Technical Statement

10.1. This Product Technical Statement:
a) Relates only to the MBRAB system as described herein;
b) Must be read, considered and used in full, together with the current version of the Technical Literature
c) Does not address any legislation, regulations, codes or standards, not specifically named herein;
d) Is copyright of BEAL

10.2 The Product Technical Statement certificate-holder continues to meet the quality requirements of the Health Based Building Ltd. Product Quality Plan and has the plan audited and this Product Technical Statement certificate revalidated by BEAL on an annual basis.

10.3 Health Based Building Ltd. shall notify BEAL and obtain approval of any changes of the product specification or quality assurance prior to product being marketed including any trade literature, web site info or the like.

10.4 BEAL makes no representation 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 the Product Technical Statement Certificate holder.

10.5 BEAL's verification of the building product or system complying with one or more of the above-mentioned criteria is given on the basis that the criteria used were those that were appropriate to demonstrate compliance with the NZBC at the date of this Product Technical Statement Certificate. In the event that the criteria is withdrawn or amended at a later date, this Product Technical Statement may no longer remain valid.

10.6 Any reference in this Product Technical Statement Certificate to any other publication shall be read as a reference to the version of publication specified in this Product Technical Statement Certificate.

Authorised Signatory,



C R Prouse - Director
BEAL (Building Element Assessment Laboratory Limited)
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