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Certificate Holder:

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THIS TO CERTIFY THAT

Low Rise Multi Residential Powerpanel⁵⁰ AAC External Wall System

Type and/or use of product:

50mm Autoclaved Aerated Concrete (AAC) panel used for external wall cladding.

Description of product:

50mm AAC External Wall Cladding system comprising of panels vertically installed across horizontal top hats with top hats fixed to steel or timber stud framing.

COMPLIES WITH THE FOLLOWING BCA PROVISIONS AND STATE OR TERRITORY VARIATION(S)

BCA 2016

	Volume One (Amdt. 1)	Volume Two
Performance Requirement(s)	BP1.1(a) & (b)(i),(ii) & (iii) FP1.4 GP5.1	P2.1.1(a) & (b)(i),(ii) & (iii) P2.2.2 P2.3.1 P2.3.4
	Structural reliability - Up to N4, C2 Weatherproofing – Up to N3 Bushfire construction in bushfire prone areas – BAL FZ - limited to external wall cladding	Structural stability and resistance – Up to N4, C2 Weatherproofing – Up to N3 Protection from the spread of fire (90/90/90 from panel side only) Fire Safety - Bushfire areas BAL-FZ - limited to external wall cladding
Deemed-to-Satisfy Provision(s):	Spec C1.1 J1.5	3.12.1.4
	Fire resisting construction (90/90/90 from panel side only) Walls (as applicable to Table J1.5a) (Can be used in conjunction with other building elements to achieve a Total R-Value)	Energy Efficiency - External Walls. (Can be used in conjunction with other building elements to achieve a Total R-Value)
State or territory variation(s):	NSW GP5.1 Qld GP5.1 Tas GP5.1	NSW, NT and SA Part 3.12, TAS P2.3.4

SUBJECT TO THE FOLLOWING LIMITATIONS AND CONDITIONS AND THE PRODUCT TECHNICAL DATA IN APPENDIX A AND EVALUATION STATEMENTS IN APPENDIX B


 John Thorpe - CMI


 Don Grehan – Unrestricted Building Certifier

Date of issue: 26/10/2018

Date of expiry: 08/10/2021



Certificate of Conformity

Limitations and conditions:

1. Only to be installed in accordance with the design and installation guide Houses and Low Rise Multi Residential PowerPanel50 External Walls ([HELIT181Oct2018](#)); available from CSR Hebel. Refer A5 below.
2. Hebel® Powerpanel⁵⁰ External Wall System is suitable for wind categories from N1 to N3 for Weatherproofing and N1 to N4 & C1 to C2 for Structure. Consult Hebel Houses and Low Rise Multi Residential PowerPanel50 External Walls design and installation guide HELIT181Oct2018 for relevant construction requirements.
3. Hebel® Powerpanel⁵⁰ External Wall System is subject to design and certification of the stud frame by a qualified professional structural engineer.
4. The Thermal R values of the Hebel® Powerpanel⁵⁰ External Wall System will vary with installation configurations refer design and installation guide HELIT181Oct2018.
5. The Hebel® Powerpanel⁵⁰ External Wall System is only to be installed by a suitably qualified tradesperson or a builder.
6. Hebel® Powerpanel⁵⁰ External Wall Systems contribute to satisfying the NCC Performance Requirements for the construction of buildings in bushfire prone areas up to BAL FZ. It is the responsibility of the Building Designer to ensure the overall compliance of the building is achieved in accordance with AS 3959-2009. In order to maintain compliance with BAL, it is the responsibility of the Building Designer to ensure compliance is achieved in accordance with AS 3959-2009.
7. The waterproofing systems for all panels is dependent on window, door and other penetration frames being designed, constructed and installed in accordance with manufacturer's recommendations to enable adequate flashing and sealing to the building.
8. Hebel® AAC PowerPanel50 Wall systems is suitable for use in designated bushfire prone areas that require a BAL-FZ or less, when installed in accordance with the design and installation guide HELIT181Oct2018; and all exposed core material is encapsulated with a non-combustible covering.
9. In the absence of a site-specific performance solution, this system is not suitable for use in or on Class 2 to 9 of Type A & B construction, where the NCC requires buildings and/or Ancillary Elements to be non-combustible.
10. Nothing in this document should be construed as a warranty or guarantee by CMI, and the only applicable warranties will be those provided by the Certificate Holder.
11. This Certificate is issued based on the evidence of compliance as detailed herein. Any deviation from the specifications contained in this Certificate is outside of this document's scope and the installation of the certified product/system will not be covered by this CodeMark certification. This may result in the product being classified as a non-conforming building product/system.

Building classification/s:

1,2,3,4,5,6,7,8,9 & 10

Scope of certification: The CodeMark Scheme is a building product certification scheme. The rules of the Scheme are available at the ABCB website www.abcb.gov.au. This Certificate of Conformity is to confirm that the relevant requirements of the Building Code of Australia (BCA) as claimed against have been met. The responsibility for the product performance and its fitness for the intended use remain with the certificate holder. The certification is not transferrable to a manufacturer not listed on Appendix A of this certificate.

Disclaimer: The Scheme Owner, Scheme Administrator and Scheme Accreditation Body do not make any representations, warranties or guarantees, and accept no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained within this certificate; and the Scheme Owner, Scheme Administrator and Scheme Accreditation Body disclaim 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 product(s) referred to in this certificate.

APPENDIX A – PRODUCT TECHNICAL DATA

A1 Type and intended use of product

As per page one.

A2 Description of product

Product	Description
Hebel®	The core component of the Hebel PowerPanel ⁵⁰ External Wall System is an AAC panel external wall cladding element installed vertically on timber or steel framed buildings.
Top Hat	Hebel Perforated Top Hats are used to fix the Hebel PowerPanel ⁵⁰ panel to the structural support framing. There are two Top Hat widths available: 24mm and 35mm – incorporating perforated flanges for ease of installation on to the external wall frame.
RONDO M515	M515 top hats are used to fix the Hebel PowerPanel ⁵⁰ panel to the structural support framing.
Fasteners & Fixings	Fixing of top hat to timber stud frame; 12-11x35mm hex head type 17 screw. Fixing of top hat to steel framing; 10-16x16mm hex head self drilling screw. Fixing of Hebel PowerPanel ⁵⁰ panels to top hat 14-10x65mm bugle head type 17 screw.
Hebel® Mortar	Hebel® Mortar (supplied in 20kg bags) when required is used as a thick bed mortar base to provide a level base for Powerpanel ⁵⁰ External Wall System installation as well as providing acoustic and fire protection at the base of the panels.
Hebel® Adhesive	Hebel® Adhesive (supplied in 20kg bags) is used for gluing the Powerpanel ⁵⁰ External Wall System panels together at vertical and horizontal joints.
Hebel® Patch	Minor Chips or damage to Powerpanel ⁵⁰ External Wall System panels are to be repaired using Hebel® Patch (supplied in 10kg bags).
Hebel® Anti Corrosion Protection Paint	To coat reinforcement steel that has been exposed during cutting of the panels.

A3 Product specification

Nominal AAC Dry Density	510kg/m ³
Length	2400mm, 2550mm, 2700mm, 2850mm & 3000mm
Width	600mm
Thickness	50mm

PowerPanel50 physical properties

- Panel reinforcement for 2400mm, 2550mm and 2700mm panel lengths is a single layer of steel mesh with 5 longitudinal wires of 4mm diameter.
- Panel reinforcement for 2850mm and 3000mm panel lengths is a single layer of steel mesh with 5 longitudinal wires of 5mm diameter.
- Nominal dry density = 510kg/m³.
- Average working density = 689kg/m³ at 35% moisture content.
- Average service life density = 561kg/m³ at 10% moisture content.

PowerPanel50 strength properties

- Characteristic Compressive Strength or AAC, $f'_{m} = 2.8\text{MPa}$.
- Average Compressive Strength of AAC = 3.2MPa
- Characteristic Modulus of Rupture, $f'_{ut} = 0.6\text{MPa}$.

PowerPanel50 thermal properties

R-Value of PowerPanel⁵⁰ with no plasterboard or other lining = 0.313m².K/W (4% moisture content).

Source: Certificate Holder.

FRL – 90/90/90

The structural adequacy is achieved via compliance of the structural frame in accordance with section B of Volume 1 or steel framing requirements under Volume 2 as well as the fixing distance being consistent with the tested prototype.

Bushfire

The Bushfire Attack Level BAL-FZ, is achieved by:

- AS 3959:2009 – ‘Construction of buildings in bushfire prone areas’ section 9.4.1 ‘External Walls’ states; ‘Walls shall be one of the following’ clause 9.4.1(c) ‘A system with an FRL of 30/30/30 or -/30/30 when tested from the outside’; and
- NCC 2016 Building Code of Australia - Construction Requirements for Bushfire Attack Level; Table SA 3.7.4.1 states: ‘*The exposed components of external walls must comply with clauses 9.4.1 and 9.4.2 of the BAL — FZ requirements of AS 3959 and any sarking-type material must have a Flammability Index of not more than 5.*’

A4 Manufacturer and manufacturing plant(s)

CSR Hebel
112 Wisemans Ferry Road,
Somersby NSW 2250.

A5 Installation requirements

Only to be installed in accordance with the design and installation guide [HELIT181Oct2018](#).

The AAC Powerpanel⁵⁰ External Wall Cladding System is only to be installed by a suitably qualified tradesperson or a builder.

A6 Other relevant technical data

Weatherproof coating

AS 5146.3:2015 Section 2.8.4 sets out the characteristics of external coating systems that will provide weatherproofing in accordance with the BCA requirements and durability in accordance with AS 5146.3:2015 Table 2.5. These characteristics are: External coating systems shall-

1. be water-resistant;
2. be vapour-permeable;
3. be capable of bridging up to a 1mm crack in the substrate; and
4. consist of a base levelling coat, and texture and finish coats.

AS 5146.3:2015 Section 2.8.4 also provides the following coating system that complies with coating requirements of AS 5146.3 Table 2.5(A):

- i. Surface preparation: Clean, patch and remove any dags. Remove all surface contaminants such as oil, grease, dust (including salt residue in coastal areas) by hosing down with fresh potable water before application of the coating system. AAC substrate shall be allowed to reach equilibrium moisture content prior to application of the coating.
- ii. Base levelling coat: Temper dry the AAC substrate with a light spray to reduce excessive suction. Apply the base-levelling coat with a hawk and stainless-steel trowel evenly over the surface to a thickness not less than 2 mm and up to 6 mm to level irregularities. Render shall not cover control joints. Follow up with a poly float to level out the product. Dry for at least 6 h to 8 h before application of the first coat.

NOTE: The base levelling coat may be omitted in circumstances when aesthetic considerations do not demand a smooth surface.

- iii. First (texture) coat: Apply with a 12mm nap roller over the surface ensuring a wet edge is maintained over the application area. Protect from rain in first 24h.
- iv. Second (finish) coat: Apply with a 12mm nap roller over the surface ensuring a wet edge is maintained over the application area. Protect from rain in first 24h. Ensure adequate batch tint lots to achieve coverage over single elevations to ensure colour consistency.

Minimum coating specification

In addition to the requirements of AS 5146.3:2015 Section 2.8.4, the coating system must meet the following minimum specifications for application over PowerPanel⁵⁰ external wall cladding:

- Base levelling coat must have embedded fibreglass reinforcing mesh with maximum aperture of 10mm by 10mm and minimum weight of 145g per m². 200mm wide fibreglass mesh need only be installed and positioned centrally over the panel adhesive joints. Base levelling coat and mesh must not cover control joints.
- The first (texture) coat and second (finish) coats must be acrylic latex coatings complying with relevant parts of AS/NZS 4548:1999 *Guide to long-life coatings for concrete and masonry*;
- The coatings must be suitable for and compatible with Hebel AAC substrate. The coating must adhere to the Hebel AAC substrate with priming if so specified by the coating manufacturer;

- The coatings, either combined first (texture) coat and second (finish) coats, or the second (finish) coat alone must meet the following minimum specifications:
 - Water transmission to AS/NZS 4548.5:1999, Appendix B must be less than 10 grams/m²/24hr at the nominated minimum coating dry film thickness;
 - Water vapour transmission to AS/NZS 4548.5:1999, Appendix C must give S_d value (equivalent air layer thickness) less than 4m at the nominated minimum coating dry film thickness;
 - Crack bridging to AS/NZS 4548.5:1999, Appendix F must show crack bridging capability greater than 1mm at the nominated minimum coating dry film thickness;
 - The coating manufacturer must specify the minimum coating dry film thickness to achieve the above specifications.

Source: *The Coatings Consultancy Pty Ltd, expert opinion 29 August 2018.*

APPENDIX B – EVALUATION STATEMENTS

B1 Evaluation methods

CMI has followed procedures for certifying Powerpanel⁵⁰ External Wall System that are based on evidence established by:

- Testing of Powerpanel⁵⁰ External Wall System product at accredited testing facilities;
- Review of engineering reports supplied by suitably qualified individuals and organisations;
- Assessing a quality plan for Powerpanel⁵⁰ External Wall System that conforms to ISO 10005 and the CodeMark scheme rules;
- By reviewing testing of, samples supplied to ascertain whether or not the product meets the performance requirements specified on this certificate; and
- Conducting site audits of the factory to verify compliance of Powerpanel⁵⁰ External Wall System.

B2 Reports

1. Bemac Laboratories; NATA Accreditation Number. 1393; Report Number. 10953; Full panel bending to AS 5146.2:2015; Dated 06/03/2017.
2. PACE Structural; Report Number. PS 18119; Structural design certificate; Dated 25/10/2018.
3. James M Fricker Pty Ltd; Report Number. i107f; Thermal performance calculations; Dated 24/07/2018.
4. CSIRO; NATA Accreditation No. 165; Report No. DTF1021; Water penetration testing to FV1 & V2.2.1 of the 75mm panel wall system; Dated 27/01/2015.
5. Aecom Australia Pty Ltd; Hebel 50mm Weatherproofing, expert opinion extrapolating weather performance from 75mm to 50mm panels as well as validation of vertical to horizontal configuration; Dated 06/09/2018.
6. CSIRO; NATA Accreditation No. 165; Report No. FCO-3241; Fire resistance of CSR Hebel PowerPanel⁵⁰ external wall system; Dated 07/08/2017.

The Certificate Holder has chosen not to make the above evidence of compliance publicly available, due to the documents being considered commercial in confidence.