

Certificate number: CM40014 Rev1

# **Certification Body:**



ABN: 81 663 250 815 JAS-ANZ Accreditation No. Z4450210AK PO Box 273, Palmwoods Qld 4555 Australia P: +61 7 5445 2199 www.cmicert.com.au office@cmicert.com.au

## **Certificate Holder:**



## CSR Hebel®

ABN: 55 008 631 356 Triniti 3. 39 Delhi Rd North Ryde, NSW 2113 Locked Bag 1345, North Ryde BC NSW 1670 Australia P: 1300 712 896 www.hebel.com.au

#### THIS IS TO CERTIFY THAT

# Low Rise Multi-Residential Hebel® PowerFloor System

Type and/or use of product: **Description of product:** 

Hebel® PowerFloor is certified as a floor element installed onto steel or timber joists forming a platform flooring system.

V-1..... O...

Part F7 (NT)

Hebel® PowerFloor is a lightweight steel reinforced autoclave aerated concrete (AAC) Panel. Refer A2 for details.

Maliana Tirra

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

**BCA 2022** 

|                                 | Volume One                        |   | Volume Two                        |   |
|---------------------------------|-----------------------------------|---|-----------------------------------|---|
| Performance Requirement(s):     | B1P1(1),(2)(a),<br>(b), (c) & (d) | Structural reliability – Refer <i>Limitation and Condition No.</i> 1.   | H1P1(1),(2)(a),<br>(b), (c) & (d) | Structural reliability and resistance – Refer <i>Limitation</i> and <i>Condition No. 1</i> .  |
|                                 | F7P1                              | Sound transmission – Floors. Can be used in conjunction with other building elements to provide insulation against the transmission of airborne and impact generated sound sufficient to prevent illness or loss of amenity to the occupants. Refer A3. |                                   |   |
| Deemed-to-Satisfy Provision(s): | C2D2(2)                           | Fire-Resisting Construction – Can be used in conjunction with other Fire-Resisting Construction to achieve an FRL floor not exceeding 90/90/90. Refer A3 and <i>Limitation and Condition No. 5</i> .  | H3D4                              | Separating Floors – Can be used in conjunction with other Fire-Resisting Construction to achieve an FRL Separating Floor not exceeding 90/90/90. Refer A3 and Limitation and Condition No. 5. |
|                                 | C2D10                             | Non-combustible building elements – Limited to the Hebel® PowerFloor panel only   | H3D2                              | Non-combustible building elements – Limited to the Hebel® PowerFloor panel only   |
|                                 | J4D7                              | Energy Efficiency – Floors. Can be used in conjunction with other building elements to achieve a Total R-Value. Refer A3.   | H6D2(1)(b)(i)                     | Energy efficiency – Floors. Can be used in conjunction with other building elements to achieve a Total R-Value. Refer A3.   |

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

Glen Gugliotti - CMI

State or territory variation(s):

Don Grehan - Unrestricted Building Certifier

Date of issue: 20/02/2025

Date of expiry: 02/02/2027





This certificate is only valid when reproduced in its entirety. Certificate number: CM40014-I05-R01

Not Applicable

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### Limitations and conditions:

Certificate number: CM40014-I05-R01

# **Building classification/s:**

- 1. The Low Rise Multi-Residential Hebel® PowerFloor System is limited to the loads and joist spans outlined in Section A3 of this Certificate of Conformity and is only to be installed in accordance with the <u>CSR Hebel® PowerFloor Houses</u>, <u>Low Rise Multi-Residential & Commercial Floors Design & Installation Guide HELIT017 September 2023</u>. Loads outside the range specified in Section A3 of this Certificate of Conformity requires a site specific assessment of determination of KPa rating of floor panels and supporting frame as they are outside the scope of this Certificate of Conformity.
- Class 1,2,3,4,5,6,7,8,9&10

- 2. R values, FRLs and Acoustic values vary with installation configurations Refer A3.
- 3. F7P1 Sound Transmission, only applies to Class 2 or 3 buildings.
- 4. It is the responsibility of the architectural designer and engineering parties to ensure that the details in this Design and Installation Guide are appropriate for the intended application.
- 5. Compliance with FRL is dependant on the system configurations as specified in A3. Any deviations from the listed system configurations in A3 do not form part of this certificate of conformity and require a site specific performance solution.
- 6. The use of the certified product/system is subject to these Limitations and Conditions and must be read in conjunction with the Scope of Certification below.

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.

Only criteria as identified within this Certificate of Conformity can be used for CodeMark certification claims. Where other claims are made in a client's Installation Manual, Website or other documents that are outside the criteria on this Certificate of Conformity, such criteria cannot be used or claimed to meet the requirements of this CodeMark certification.

The NCC defines a Performance Solution as one that complies with the Performance Requirements by means other than a Deemed-to-Satisfy Solution. A Building Solution that relies on a CodeMark Certificate of Conformity that certifies a product against the Performance Requirements cannot be considered as Deemed-to-Satisfy Solution.

This Certificate of Conformity may only relate to a part of a Performance Solution. In these circumstances other evidence of suitability is needed to demonstrate that the relevant Performance Requirements have been met. The relevant provisions of the Governing Requirements in Part A of the NCC will also need to be satisfied.

This Certificate of Conformity is issued based on the evidence of compliance as detailed herein. Any deviation from the specifications contained in this Certificate of Conformity is outside of this document's scope and the installation of the certified product will not be covered by this Certificate of Conformity.

**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.

When using the CodeMark logo in relation to or on the product/system, the Certificate Holder makes a declaration of compliance with the Scope of Certification and confirms that the product is identical to the product certified herein. In issuing this Certificate of Conformity, CMI Certification Pty Ltd (CMI) has relied on the experience and expertise of external bodies (laboratories and technical experts).

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.



## APPENDIX A – PRODUCT TECHNICAL DATA

# A1 Type and intended use of product

Certificate number: CM40014-I05-R01

As per page 1.

# A2 Description of product

The Low Rise Multi-Residential Hebel® PowerFloor Systems consists of the following components:

| Product                 |  |                   |                        | Description  |  |  |  |  |  |  |  |  |
|-------------------------|--|-------------------|------------------------|--|--|--|--|--|--|--|--|--|
| Hebel® PowerFloor panel | The core compor  | nent of Low Rise  | Multi-Residential He   | bel® PowerFloor System is the 75mm thick, steel mesh reinforced Hebel® PowerFloor panel.   |  |  |  |  |  |  |  |  |
|                         | The panel is man   | ufactured in the  | following sizes.       |  |  |  |  |  |  |  |  |  |
|                         | Length (mm)  | Width (mm)        | Thickness (mm)         |  |  |  |  |  |  |  |  |  |
|                         | 1800   | 600               | 75                     |  |  |  |  |  |  |  |  |  |
|                         | 2400   | 600               | 75                     |  |  |  |  |  |  |  |  |  |
|                         | Where necessary, panels can be cut on-site using a circular saw with diamond tipped cutting blade. The minimum recommended width of a cut panel is 270mm. The minimum              |                   |                        |  |  |  |  |  |  |  |  |  |
|                         | length of a cut panel shall be double the length of the joist spacing of the floor – i.e. 1200mm length where installed over joist spacings set out at 600mm. These lengths can be |                   |                        |  |  |  |  |  |  |  |  |  |
|                         | reduced if additional support is provided so that the panel is supported on 3 joists and is continuous over 2 spans with the maximum joist to joist spacing in accordance with     |                   |                        |  |  |  |  |  |  |  |  |  |
|                         | Section 2.1 – Structural Performance.  |                   |                        |  |  |  |  |  |  |  |  |  |
|                         | Furthermore, the minimum staggered overlap between adjacent (side-by-side) panels must have one joist bay, and not less than 450mm. Staggered joints are not required              |                   |                        |  |  |  |  |  |  |  |  |  |
|                         | where panel joints can be avoided and the full panel length can be used to infill the floor area.  |                   |                        |  |  |  |  |  |  |  |  |  |
|                         | The panels are so  | rew fixed and b   | onded to all floor joi | sts except at panel butt joints. At butt joints, panels are fixed using two beads of adhesive, and the screws may be omitted.      |  |  |  |  |  |  |  |  |
| Timber & Steel Support  | Timber or steel floor framing can be used to support the Hebel® PowerFloor panels. The allowable spacing of the joists are 300mm, 450mm or 600mm (refer to section 2.1 of the      |                   |                        |  |  |  |  |  |  |  |  |  |
| Systems                 | Hebel® PowerFloor Design & Installation Guide HELIT017 September 2023). The joists, bearers and other supports shall be sized in accordance with the framing manufacturer's        |                   |                        |  |  |  |  |  |  |  |  |  |
|                         | recommendations. Where steel joist framing is used it must be ensured that the PowerFloor panels are provided with uniform and complete bearing onto each steel joist.             |                   |                        |  |  |  |  |  |  |  |  |  |
|                         | NOTE: The designer should allow at least 51kg/m² for the self-weight of the Hebel® PowerFloor panel. A minimum joist flange width of 45mm is required.                             |                   |                        |  |  |  |  |  |  |  |  |  |
| Hebel® Adhesive         | Hebel® Adhesive  | (supplied in 20k  | g bags) is used for gl | uing the panels together at all joints. Typically, panel joints are 2-3mm thick. Sufficient pressure is to be applied to the joint |  |  |  |  |  |  |  |  |
|                         | to ensure full cov   | erage of adhesi   | ve in the joint. Adhe  | sive is to be mixed to the proportions as stated on the bag.   |  |  |  |  |  |  |  |  |
| Construction Adhesive   | A 5mm (minimur   | n) bead of Fulle  | Max Bond construc      | tion adhesive is applied to the top of the joists. Where panel ends butt together over a common joist, two beads of                |  |  |  |  |  |  |  |  |
|                         | adhesive shall be  | applied. Ensure   | the surface is free o  | f coatings and loose material that may inhibit bond.   |  |  |  |  |  |  |  |  |
| Fasteners & Fixings     | Screws for fixing  | Hebel® PowerF     | loor panels to Timbe   | er Joists:   |  |  |  |  |  |  |  |  |
|                         | 14-10 x 100mm N  | MP Bugle Head t   | ype 17 Screws or eq    | uivalent.  |  |  |  |  |  |  |  |  |
|                         | Screws for fixing  | Hebel® PowerF     | loor panels to Steel   | Joists:  |  |  |  |  |  |  |  |  |
|                         |  |                   |                        | alent (no seal required). This fastener is suitable for metal thickness <1.2mm. Refer to screw manufacturer's guidelines.          |  |  |  |  |  |  |  |  |
| Caulking                | Hebel® PowerFlo  | or requires that  | all gaps at openings   | penetrations and control joints be caulked to provide an airtight floor system that maintains acoustic, thermal, vermin and        |  |  |  |  |  |  |  |  |
|                         | fire resistance pe   | erformance. All g | aps must be carefull   | y and completely filled with an appropriate flexible polyurethane sealant, installed in accordance with the sealant                |  |  |  |  |  |  |  |  |
|                         | manufacturer's s   | pecifications.    |                        |  |  |  |  |  |  |  |  |  |
|                         | NOTE: The design   | ner should speci  | fy the magnitude of    | the gaps between the Hebel® PowerFloor panel and structure. This gap will allow movement to release any confining                  |  |  |  |  |  |  |  |  |
|                         | stresses due to m  | novement of the   | supporting structure   | 2.   |  |  |  |  |  |  |  |  |
| Hebel® Patch            | Minor Chips or d   | amage to Hebel    | PowerFloor panels      | are to be repaired using Hebel® Patch (supplied in 10kg bags).   |  |  |  |  |  |  |  |  |
| Hebel® anti-corrosion   | To coat exposed  | reinforcement o   | uring cutting.         |  |  |  |  |  |  |  |  |  |
| protection paint        |  |                   |                        |  |  |  |  |  |  |  |  |  |



## A3 Product specification

#### **Structural Performance**

Hebel® PowerFloor systems can support a maximum uniformly distributed load of 5kPa, or concentrated (point) load of 1.8kN over a load area of 350mm² (with joists at 450mm or 600mm centres only) and 2.7kN & 3.9kN over a load area of 10,000mm² (with joists at 300mm centres) when installed in accordance with Section 3.3 of CSR Hebel® PowerFloor Houses, Low Rise Multi-Residential & Commercial Floors Design & Installation Guide HELIT017 September 2023.

For loads outside this range, please contact CSR Hebel® as they are outside this Scope of Certification of this Certificate of Conformity.

The designer should specify the magnitude of the gaps between the Hebel® PowerFloor panel and structure. This gap will allow movement to release any confining stresses due to movement of the supporting structure.

Source: PACE Structural Pty Ltd Structural Design Certificate No. PS20116 dated 23/01/2025.

### Non-combustibility - Limited to the Hebel® PowerFloor Panel only

The Certificate Holder has provided the Certificate of Test for Combustibility for Materials in accordance with AS 1530.1:1994 for Hebel® PowerPanel – Autoclaved Aerated Concrete (AAC) Dry Density 510kgm³.

The material is NOT deemed combustible – Limited to the panel only.

Source: CSIRO; NATA Accreditation No. 165; Report No. FNC12427A dated 02/09/2019.

#### Acoustic Performance and Fire-Resistance Levels

To achieve the Acoustic and Thermal Performances tabled below, The Hebel® PowerFloor System Configurations must be constructed in accordance with Section 2.1 of Hebel® PowerFloor Houses, Low Rise Multi-Residential & Commercial Floors Design & Installation Guide HELIT017 September 2023.

FRL Note: Warringtonfire and Jensen Hughes have provided assessments of the Fire-Resistance Levels that have been tabled below for the Low Rise Multi-Residential Hebel® PowerFloor Systems.

Source: Warringtonfire Australia Pty Ltd, Fire Assessment Report No. 26162 R3.2 dated 01/09/2023 & Jensen Hughes Pty Ltd, Fire Assessment Report No. 115620-FAR10-r2 dated 27/04/2023.

Acoustic Note: PKA Acoustic Consulting has provided an assessment of the Low Rise Multi-Residential Hebel® PowerFloor Systems and the Acoustic performances have been tabled below.

Source: PKA Acoustic Consulting Pty Ltd Report No. PKA-A071 Version 5 dated 18/04/2023.



# **Hebel® PowerFloor System – Carpet**

|             | C           | arpet                                   | Fire            |    | Acoustic |     |
|-------------|-------------|---|-----------------|----|----------|-----|
| System Code | Floor Joist | System Description                      | FRL             | Rw | Rw+Ctr   | Lnw |
| CSR21184    | Timber      | Carpet, PowerFloor 75mm,                | 90/90/90        | 37 | 33       | 45  |
| CSR22109    | Steel       | ground floor enclosed                   | From above only | 37 | 33       | 45  |
| CSR21185    | Timber      | Carpet, PowerFloor 75mm,                | 90/90/90        | 37 | 33       | 45  |
| CSR22110    | Steel       | ground floor unenclosed                 | From above only | 37 | 33       | 45  |
| CSR21186    | Timber      | Carpet, PowerFloor 75mm,                | 90/90/90        | 55 | 48       | 33  |
| CSR22111    | Steel       | Gyprock ceiling (CSR 6209)1             | From above only | 55 |          | 33  |
| CSR21187    | Timber      | Carpet, PowerFloor 75mm,                | 90/90/90 Above  | 58 | 52       | 30  |
| CSR22112    | Steel       | Gyprock ceiling (CSR 6217) <sup>1</sup> | 60/60/60 Below  | 58 | 52       | 30  |
| CSR21188    | Timber      | Carpet, PowerFloor 75mm,                | 90/90/90        | 59 | 53       | 30  |
| CSR22113    | Steel       | Gyprock ceiling (CSR 6222)1             | Above and below | 59 | 53       | 30  |

#### NOTE:

- 1. For Gyprock ceiling system description refer to Table 1.3.1 Ceiling Systems on page 5 of <u>CSR Hebel® PowerFloor Houses, Low Rise</u> Multi-Residential & Commercial Floors Design & Installation Guide HELIT017 September 2023.
- 2. Acoustic values are based on joist spacing of 600mm and joist depth of 190mm filled with 90mm Gold Batts Insulation R2.0. Contact Technical Services for further details on system.

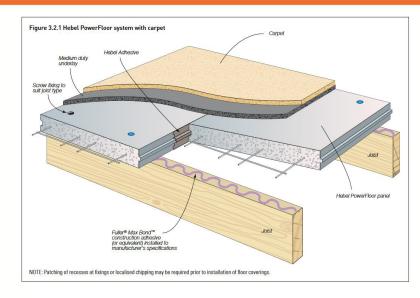
## Hebel® PowerFloor System - Vinyl Sheet with Masonite

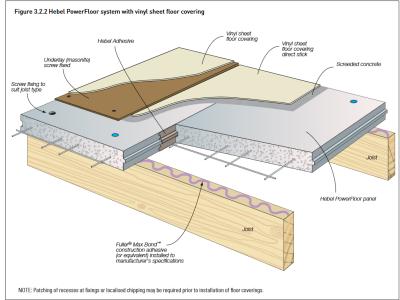
Certificate number: CM40014-I05-R01

|                         | Vinyl Shee | et with Masonite                              | Fire            | Acoustic |                   |     |  |  |  |
|-------------------------|------------|---|-----------------|----------|-------------------|-----|--|--|--|
| System Code Floor Joist |            | System Description                            | FRL             | Rw       | R <sub>w</sub> +C | Lnw |  |  |  |
| CSR21199                | Timber     | Vinyl sheet, masonite, PowerFloor             | 90/90/90        | 20       | 24                | 7.0 |  |  |  |
| CSR22114                | Steel      | 75mm, ground floor enclosed                   | From above only | 38       | 34                | 76  |  |  |  |
| CSR21200                | Timber     | Vinyl sheet, masonite, PowerFloor             | 90/90/90        |          | 2.4               | 7.0 |  |  |  |
| CSR22115                | Steel      | 75mm, ground floor unenclosed                 | From above only | 38       | 34                | 76  |  |  |  |
| CSR21201                | Timber     | Vinyl sheet, masonite, PowerFloor             | 90/90/90        |          |                   |     |  |  |  |
| CSR22116                | Steel      | 75mm, Gyprock ceiling (CSR 6209) <sup>1</sup> | From above only | 56       | 48                | 64  |  |  |  |
| CSR21202                | Timber     | Vinyl sheet, masonite, PowerFloor             | 90/90/90 Above  |          |                   |     |  |  |  |
| CSR22117                | Steel      | 75mm, Gyprock ceiling (CSR 6217) <sup>1</sup> | 60/60/60 Below  | 59       | 52                | 60  |  |  |  |
| CSR21203                | Timber     | Vinyl sheet, masonite, PowerFloor             | 90/90/90        |          |                   |     |  |  |  |
| CSR22118 Steel          |            | 75mm, Gyprock ceiling (CSR 6222) <sup>1</sup> | Above and below | 60       | 53                | 59  |  |  |  |

#### NOTE:

- 1. For Gyprock ceiling system description refer to Table 1.3.1 Ceiling Systems on page 5 of <u>CSR Hebel® PowerFloor Houses, Low Rise Multi-Residential & Commercial Floors Design & Installation Guide HELIT017 September 2023.</u>
- 2. Acoustic values are based on joist spacing of 600mm and joist depth of 190mm filled with 90mm Gold Batts Insulation R2.0. Contact Technical Services for further details on system.



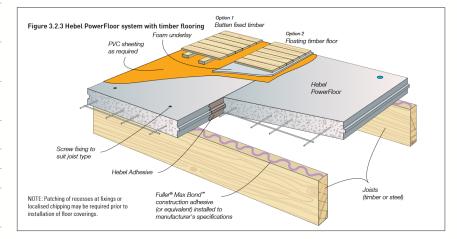




# **Hebel® PowerFloor System – Timber Floors**

|                                    | Timber      | Floors on Battens                             | Fire            | Acoustic |        |      |   |  |  |
|------------------------------------|-------------|---|-----------------|----------|--------|------|---|--|--|
| System Code                        | Floor Joist | System Description                            | FRL             | Rw       | Rw+Ctr | Lnw  |   |  |  |
| CSR21204.1                         | Timber      | Timber floor, Battens, PVC, PowerFloor        | 90/90/90        | 27       | 22     | 00   |   |  |  |
| CSR21204.2                         | Steel       | 75mm, ground floor enclosed                   | From above only | 37       | 33     | 80   |   |  |  |
| CSR21205.1 Timber CSR21205.2 Steel |             | Timber floor, Battens, PVC, PowerFloor        | 90/90/90        | 27       | 22     | 00   |   |  |  |
|                                    |             | 75mm, ground floor unenclosed                 | From above only | 37       | 33     | 80   |   |  |  |
| CSR21206.1                         | Timber      | Timber floor, Battens, PVC, PowerFloor        | 90/90/90        |          | 40     | C.F. |   |  |  |
| CSR21206.2                         | Steel       | 75mm, Gyprock ceiling (CSR 6209) <sup>1</sup> | From above only | 55       | 48     | 65   |   |  |  |
| CSR21207.1                         | Timber      | Timber floor, Battens, PVC, PowerFloor        | 90/90/90 Above  |          |        |      |   |  |  |
| CSR21207.2                         | Steel       | 75mm, Gyprock ceiling (CSR 6217) <sup>1</sup> | 60/60/60 Below  | 58       | 58     | 61   |   |  |  |
| CSR21208.1                         | Timber      | Timber floor, Battens, PVC, PowerFloor        | 90/90/90        |          |        |      |   |  |  |
| CSR21208.2                         | Steel       | 75mm, Gyprock ceiling (CSR 6222) <sup>1</sup> | Above and below | 59       | 53     | 59   |   |  |  |
|                                    |             |   |                 |          |        |      | _ |  |  |

|                 | Timbe       | r Floating Floors                             | Fire            | Acoustic |                                 |     |  |  |  |
|-----------------|-------------|---|-----------------|----------|---------------------------------|-----|--|--|--|
| System Code     | Floor Joist | System Description                            | FRL             | Rw       | R <sub>W</sub> +C <sub>tr</sub> | Lnw |  |  |  |
| CSR21209 Timber |             | Timber floor, underlay, PVC, PowerFloor       | 90/90/90        | 27       | 22                              |     |  |  |  |
| CSR22119        | Steel       | 75mm, ground floor enclosed                   | From above only | 37       | 33                              | 77  |  |  |  |
| CSR21210        | Timber      | Timber floor, underlay, PVC, PowerFloor       | 90/90/90        | 27       | 22                              |     |  |  |  |
| CSR22120        | Steel       | 75mm, ground floor unenclosed                 | From above only | 37       | 33                              | 77  |  |  |  |
| CSR21211        | Timber      | Timber floor, underlay, PVC, PowerFloor       | 90/90/90        |          | 40                              |     |  |  |  |
| CSR22121        | Steel       | 75mm, Gyprock ceiling (CSR 6209) <sup>1</sup> | From above only | 56       | 48                              | 63  |  |  |  |
| CSR21212        | Timber      | Timber floor, underlay, PVC, PowerFloor       | 90/90/90 Above  |          |                                 |     |  |  |  |
| CSR22122        | Steel       | 75mm, Gyprock ceiling (CSR 6217) <sup>1</sup> | 60/60/60 Below  | 59       | 52                              | 59  |  |  |  |
| CSR21213        | Timber      | Timber floor, underlay, PVC, PowerFloor       | 90/90/90        |          |                                 |     |  |  |  |
| CSR22123        | Steel       | 75mm, Gyprock ceiling (CSR 6222) <sup>1</sup> | Above and below | 60       | 53                              | 58  |  |  |  |



### NOTE:

- 1. For Gyprock ceiling system description refer to Table 1.3.1 Ceiling Systems on page 5 of CSR Hebel® PowerFloor Houses, Low Rise Multi-Residential & Commercial Floors Design & Installation Guide HELIT017 September 2023.
- 2. Acoustic values are based on joist spacing of 600mm and joist depth of 190mm filled with 90mm Gold Batts Insulation R2.0. Contact Technical Services for further details on system.



### Hebel® PowerFloor System - 8mm Ceramic Tiles

|                | 8MM Ce                                  | ramic Tiles                             | Fire            |     | Acoustic |                    |
|----------------|---|---|-----------------|-----|----------|--------------------|
| System Code    | Floor Joist                             | System Description                      | FRL             | Rw  | Rw+Ctr   | Lnw                |
| CSR21189       | Timber                                  | Floor tiles, PowerFloor 75mm,           | 90/90/90        | 20  | 2.4      | 02                 |
| CSR22124       | Steel                                   | ground floor enclosed                   | From above only | 38  | 34       | 82                 |
| CSR21190       | Timber                                  | Floor tiles, PowerFloor 75mm,           | 90/90/90        | 20  | 2.4      | 02                 |
| CSR22125       | Steel                                   | ground floor unenclosed                 | From above only | 38  | 34       | 82                 |
| CSR21191       | Timber                                  | Floor tiles, PowerFloor 75mm,           | 90/90/90        | F.4 | 40       | 74/643             |
| CSR22126       | Steel                                   | Gyprock ceiling (CSR 6209) <sup>1</sup> | From above only | 54  | 48       | 74/64 <sup>3</sup> |
| CSR21192       | Timber                                  | Floor tiles, PowerFloor 75mm,           | 90/90/90 Above  | F-7 | F4       | 70/00              |
| CSR22127       | Steel                                   | Gyprock ceiling (CSR 6217) <sup>1</sup> | 60/60/60 Below  | 57  | 51       | 70/60 <sup>3</sup> |
| CSR21193       | Timber                                  | Floor tiles, PowerFloor 75mm,           | 90/90/90        | 58  | 52       | 60/50              |
| CSR22128 Steel | Gyprock ceiling (CSR 6222) <sup>1</sup> | <sup>1</sup> Above and below            |                 | 52  | 69/59    |                    |

#### NOTE:

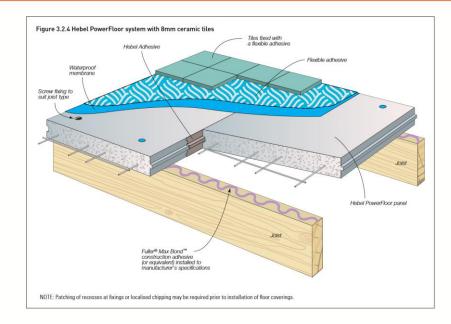
- 1. For Gyprock ceiling system description refer to Table 1.3.1 Ceiling Systems on page 5 of <u>CSR Hebel® PowerFloor Houses, Low Rise</u> Multi-Residential & Commercial Floors Design & Installation Guide HELIT017 September 2023.
- 2. Acoustic values are based on joist spacing of 600mm and joist depth of 190mm filled with 90mm Gold Batts Insulation R2.0. Contact Technical Services for further details on system.
- 3. Performance of floor system is with use of minimum 4.5mm rubber underlay.

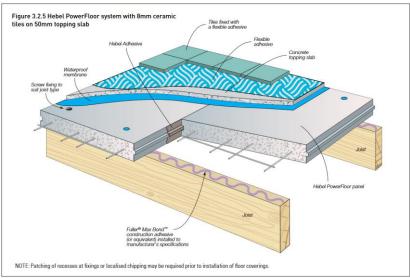
# Hebel® PowerFloor System - 8MM Ceramic Tiles on 50MM Topping Slab

| 81/             | /IM Ceramic Tile | s on 50MM Topping Slab                        | Fire               |         | Acoustic       | 3      |
|-----------------|------------------|---|--------------------|---------|----------------|--------|
| System Code     | Floor Joist      | System Description                            | FRL                | $R_{W}$ | $R_W + C_{tr}$ | Lnw    |
| CSR21194 Timber |                  | Floor tiles, topping slab, PowerFloor         | 90/90/90 From      | 43      | 20             | 79     |
| CSR22129        | Steel            | 75mm, ground floor enclosed                   | above only         | 43      | 39             | 79     |
| CSR21195 Timber |                  | Floor tiles, topping slab, PowerFloor         | 90/90/90 From      | 42      | 20             | 70     |
| CSR22130        | Steel            | 75mm, ground floor unenclosed                 | above only         | 43      | 39             | 79     |
| CSR21196        | Timber           | Floor tiles, topping slab, PowerFloor         | 90/90/90 From      | 57      | 40             | 74./50 |
| CSR22131        | Steel            | 75mm, Gyprock ceiling (CSR 6209) <sup>1</sup> | above only         | 57      | 49             | 71/60  |
| CSR21197        | Timber           | Floor tiles, topping slab, PowerFloor         | 90/90/90 Above     | 60      | F2             | C7/F0  |
| CSR22132        | Steel            | 75mm, Gyprock ceiling (CSR 6217) <sup>1</sup> | 60/60/60 Below     | 60      | 53             | 67/59  |
| CSR21198        | Timber           | Floor tiles, topping slab, PowerFloor         | 90/90/90 Above and | 61      | 54             | 66/55  |
| CSR22133 Steel  |                  | 75mm, Gyprock ceiling (CSR 6222) <sup>1</sup> | 2)¹ below          |         | 54             | 00/55  |

#### NOTE:

- 1. For Gyprock ceiling system description refer to Table 1.3.1 Ceiling Systems on page 5 of <u>CSR Hebel® PowerFloor Houses, Low Rise</u> <u>Multi-Residential & Commercial Floors Design & Installation Guide HELIT017 September 2023.</u>
- 2. Acoustic values are based on joist spacing of 600mm and joist depth of 190mm filled with 90mm Gold Batts Insulation R2.0. Contact Technical Services for further details on system.
- 3. Performance of floor system is with use of minimum 4.5mm rubber underlay.







Thermal Properties – Total R Values of Low Rise Multi-Residential Hebel® PowerFloor Systems consisting with Steel Joists

Interfloor Total R values (2nd storey floor/ceiling)

|   |       | Unins  | ulated |         |          |       |          | R2.0 in | sulated ( | ceiling sy | stem typ | e beneat | h floor  |       |       |       |
|---|-------|--------|--------|---------|----------|-------|----------|---------|-----------|------------|----------|----------|----------|-------|-------|-------|
|   | No c  | eiling | With   | ceiling | CSR 6209 |       | CSR 6221 |         | CSR 6217  |            | CSR 6222 |          | CSR 6223 |       | CSR   | 6220  |
| Floor Type  | Up    | Down   | Up     | Down    | Up       | Down  | Up       | Down    | Up        | Down       | Up       | Down     | Up       | Down  | Up    | Down  |
| 75mm Hebel® PowerFloor with Carpet  | R0.94 | R1.04  | R1.16  | R1.34   | R2.68    | R3.01 | R2.79    | R3.11   | R2.77     | R3.09      | R2.81    | R3.13    | R2.92    | R3.24 | R2.68 | R3.05 |
| 75mm Hebel <sup>®</sup> PowerFloor with Ceramic Tiles on 50mm concrete topping slab | R0.70 | R0.80  | R0.92  | R1.10   | R2.42    | R2.73 | R2.54    | R2.84   | R2.52     | R2.82      | R2.56    | R2.86    | R2.67    | R2.97 | R2.40 | R2.77 |
| 75mm Hebel® PowerFloor with Ceramic Tiles on flexible adhesive                      | R0.67 | R0.77  | R0.89  | R1.07   | R2.38    | R2.69 | R2.50    | R2.80   | R2.48     | R2.78      | R2.52    | R2.82    | R2.63    | R2.93 | R2.36 | R2.73 |
| 75mm Hebel® PowerFloor with Vinyl on masonite                                       | R0.67 | R0.77  | R0.89  | R1.07   | R2.38    | R2.69 | R2.50    | R2.80   | R2.48     | R2.78      | R2.52    | R2.82    | R2.63    | R2.93 | R2.36 | R2.73 |
| 75mm Hebel® PowerFloor with Vinyl on screeded concrete                              | R0.66 | R0.76  | R0.88  | R1.06   | R2.37    | R2.68 | R2.49    | R2.79   | R2.47     | R2.77      | R2.51    | R2.81    | R2.62    | R2.92 | R2.35 | R2.72 |
| 75mm Hebel® PowerFloor with T&G flooring and nonreflective 35mm air space           | R0.91 | R1.06  | R1.14  | R1.34   | R2.67    | R3.03 | R2.77    | R3.13   | R2.75     | R3.12      | R2.79    | R3.15    | R2.90    | R3.26 | R2.66 | R3.05 |
| 75mm Hebel® PowerFloor with T&G flooring and reflective 35mm air space              | R1.22 | R1.99  | R1.44  | R2.30   | R3.02    | R4.05 | R3.12    | R4.15   | R3.10     | R4.13      | R3.14    | R4.17    | R3.24    | R4.26 | R3.24 | R3.63 |
| 75mm Hebel® PowerFloor with Tasmanian Oak 3 strip flooring on underlay              | R0.81 | R0.91  | R1.03  | R1.21   | R2.55    | R2.85 | R2.66    | R2.96   | R2.64     | R2.94      | R2.68    | R2.98    | R2.79    | R3.09 | R2.53 | R2.90 |
| 75mm Hebel® PowerFloor with T&G Hardwood flooring on 12mm plywood                   | R0.84 | R0.94  | R1.06  | R1.25   | R2.59    | R2.90 | R2.70    | R3.00   | R2.68     | R2.99      | R2.72    | R3.02    | R2.83    | R3.13 | R2.57 | R2.94 |

Note: The above table assumes 0.11 (up) or 0.16 (down) floor and ceiling air film resistances per Table 15 of AS/NZS 4859.1:2018.

Ground floor Total R values (exposed subfloor, e.g. car park)

|   |       | Unins  | ulated |         |          |       |          | R2.0 in | sulated  | ceiling sy | stem typ | e beneat | h floor  |       |       |       |
|---|-------|--------|--------|---------|----------|-------|----------|---------|----------|------------|----------|----------|----------|-------|-------|-------|
|   | No c  | eiling | With   | ceiling | CSR 6209 |       | CSR 6221 |         | CSR 6217 |            | CSR 6222 |          | CSR 6223 |       | CSR   | 6220  |
| Floor Type  | Up    | Down   | Up     | Down    | Up       | Down  | Up       | Down    | Up       | Down       | Up       | Down     | Up       | Down  | Up    | Down  |
| 75mm Hebel® PowerFloor with Carpet  | R0.91 | R0.96  | R1.13  | R1.26   | R2.65    | R2.93 | R2.76    | R3.03   | R2.74    | R3.01      | R2.78    | R3.05    | R2.89    | R3.16 | R2.65 | R2.97 |
| 75mm Hebel® PowerFloor with Ceramic Tiles on 50mm concrete topping slab   | R0.67 | R0.72  | R0.89  | R1.02   | R2.39    | R2.65 | R2.51    | R2.76   | R2.49    | R2.74      | R2.53    | R2.78    | R2.64    | R2.89 | R2.37 | R2.69 |
| 75mm Hebel® PowerFloor with Ceramic Tiles on flexible adhesive            | R0.64 | R0.69  | R0.86  | R0.99   | R2.35    | R2.61 | R2.47    | R2.72   | R2.45    | R2.70      | R2.49    | R2.74    | R2.60    | R2.85 | R2.33 | R2.65 |
| 75mm Hebel® PowerFloor with Vinyl on masonite                             | R0.64 | R0.69  | R0.86  | R0.99   | R2.35    | R2.61 | R2.47    | R2.72   | R2.45    | R2.70      | R2.49    | R2.74    | R2.60    | R2.85 | R2.33 | R2.65 |
| 75mm Hebel® PowerFloor with Vinyl on screeded concrete                    | R0.63 | R0.68  | R0.85  | R0.98   | R2.34    | R2.60 | R2.46    | R2.71   | R2.44    | R2.69      | R2.48    | R2.73    | R2.59    | R2.84 | R2.32 | R2.64 |
| 75mm Hebel® PowerFloor with T&G flooring and nonreflective 35mm air space | R0.88 | R0.98  | R1.11  | R1.26   | R2.64    | R2.95 | R2.74    | R3.05   | R2.72    | R3.04      | R2.76    | R3.07    | R2.87    | R3.18 | R2.63 | R2.97 |
| 75mm Hebel® PowerFloor with T&G flooring and reflective 35mm air space    | R1.19 | R1.91  | R1.41  | R2.22   | R2.99    | R3.97 | R3.09    | R4.07   | R3.07    | R4.05      | R3.11    | R4.09    | R3.21    | R4.18 | R3.21 | R3.55 |
| 75mm Hebel® PowerFloor with Tasmanian Oak 3 strip flooring on underlay    | R0.78 | R0.83  | R1.00  | R1.13   | R2.52    | R2.77 | R2.63    | R2.88   | R2.61    | R2.86      | R2.65    | R2.90    | R2.76    | R3.01 | R2.50 | R2.82 |
| 75mm Hebel® PowerFloor with T&G Hardwood flooring on 12mm plywood         | R0.81 | R0.86  | R1.03  | R1.17   | R2.56    | R2.82 | R2.67    | R2.92   | R2.65    | R2.91      | R2.69    | R2.94    | R2.80    | R3.05 | R2.54 | R2.86 |

Note: The above table assumes air film resistances of 0.11 (up) or 0.16 (down) for floor per Table 15 of AS/NZS 4859.1:2018, and 0.08 (up or down) for exposed ceiling air film resistance.



Ground floor Total R values (enclosed subfloor)

|   |       | Uninsulated |       |         |          |       |          | R2.0 in | sulated o | eiling sy | stem typ | e beneat | h floor  |       |       |       |
|---|-------|-------------|-------|---------|----------|-------|----------|---------|-----------|-----------|----------|----------|----------|-------|-------|-------|
|   | No ce | eiling      | With  | ceiling | CSR 6209 |       | CSR 6221 |         | CSR 6217  |           | CSR 6222 |          | CSR 6223 |       | CSR   | 6220  |
| Floor Type  | Up    | Down        | Up    | Down    | Up       | Down  | Up       | Down    | Up        | Down      | Up       | Down     | Up       | Down  | Up    | Down  |
| 75mm Hebel® PowerFloor with Carpet  | R1.50 | R1.62       | R1.72 | R1.92   | R3.24    | R3.59 | R3.35    | R3.69   | R3.33     | R3.67     | R3.37    | R3.71    | R3.48    | R3.82 | R3.24 | R3.63 |
| 75mm Hebel® PowerFloor with Ceramic Tiles on 50mm concrete topping slab   | R1.26 | R1.38       | R1.48 | R1.68   | R2.98    | R3.31 | R3.10    | R3.42   | R3.08     | R3.40     | R3.12    | R3.44    | R3.23    | R3.55 | R2.96 | R3.35 |
| 75mm Hebel® PowerFloor with Ceramic Tiles on flexible adhesive            | R1.23 | R1.35       | R1.45 | R1.65   | R2.94    | R3.27 | R3.06    | R3.38   | R3.04     | R3.36     | R3.08    | R3.40    | R3.19    | R3.51 | R2.92 | R3.31 |
| 75mm Hebel® PowerFloor with Vinyl on masonite                             | R1.23 | R1.35       | R1.45 | R1.65   | R2.94    | R3.27 | R3.06    | R3.38   | R3.04     | R3.36     | R3.08    | R3.40    | R3.19    | R3.51 | R2.92 | R3.31 |
| 75mm Hebel® PowerFloor with Vinyl on screeded concrete                    | R1.22 | R1.34       | R1.44 | R1.64   | R2.93    | R3.26 | R3.05    | R3.37   | R3.03     | R3.35     | R3.07    | R3.39    | R3.18    | R3.50 | R2.91 | R3.30 |
| 75mm Hebel® PowerFloor with T&G flooring and nonreflective 35mm air space | R1.47 | R1.64       | R1.70 | R1.92   | R3.23    | R3.61 | R3.33    | R3.71   | R3.31     | R3.70     | R3.35    | R3.73    | R3.46    | R3.84 | R3.22 | R3.63 |
| 75mm Hebel® PowerFloor with T&G flooring and reflective 35mm air space    | R1.78 | R2.57       | R2.00 | R2.88   | R3.58    | R4.63 | R3.68    | R4.73   | R3.66     | R4.71     | R3.70    | R4.75    | R3.80    | R4.84 | R3.80 | R4.21 |
| 75mm Hebel® PowerFloor with Tasmanian Oak 3 strip flooring on underlay    | R1.37 | R1.49       | R1.59 | R1.79   | R3.11    | R3.43 | R3.22    | R3.54   | R3.20     | R3.52     | R3.24    | R3.56    | R3.35    | R3.67 | R3.09 | R3.48 |
| 75mm Hebel® PowerFloor with T&G Hardwood flooring on 12mm plywood         | R1.40 | R1.52       | R1.62 | R1.83   | R3.15    | R3.48 | R3.26    | R3.58   | R3.24     | R3.57     | R3.28    | R3.60    | R3.39    | R3.71 | R3.13 | R3.52 |

Note: The above table assumes air film resistances of 0.11 (up) or 0.16 (down) for both floor and ceiling per Table 15 of AS/NZS 4859.1:2018, plus Ground Thermal Resistance (RGX) of 0.56 (up) or 0.58 (down) of Table K3 of the standard.

| NOTES: | Determinations based upon AS/NZS 4859 Parts 1&2:2018, Thermal insulation materials for buildings.   |
|--------|---|
|        | The results are believed representative at the date of calculation, however the author reserves the right to revise calculations.   |
|        | All Total RT values include the effect of thermal bridging for 50x100x1mm BMT steel joists with 600mm spacing.  |
|        | See individual calc pages for R <sub>Ti</sub> values for the insulation path only. JMF calcs 107.23i-107.29i relate to insulated floors. For uninsulated floors, see JMF calcs 107.23ii-107.29ii. |
|        | Above for 510kg/m³ Hebel® 75mm PowerFloor™ with R=0.375 (for 14% moisture content) based upon CSR Insulation Research Laboratory test report NR-12140 of 9/10/2012                                |
|        | "Up/Down" refers to heat flow direction. (For floors, Up=summer, Down=Winter)   |
|        | "Bare floor, with ceiling" is for one sheet of 13mm GYPROCK Plasterboard (140mm floor joists, 28mm furring channel)   |
|        | CSR 6209 has Bradford Soundscreen™ R2.0 Batts (75mm), 1x13mm GYPROCK  |
|        | CSR 6221 has Bradford Soundscreen™ R2.0 Batts (75mm), 1x13mm GYPROCK FYRCHEK + 1x16mm GYPROCK FYRCHEK   |
|        | CSR 6217 has Bradford Soundscreen™ R2.0 Batts (75mm), 2x13mm GYPROCK FYRCHEK  |
|        | CSR 6222 has Bradford Soundscreen™ R2.0 Batts (75mm), 2x16mm GYPROCK FYRCHEK  |
|        | CSR 6223 has Bradford Soundscreen™ R2.0 Batts (75mm), 3x16mm GYPROCK FYRCHEK  |
|        | CSR 6220 has Bradford Gold™ R2.0 Batts (90mm), 1x16mm GYPROCK FYRCHEK   |
|        | Calculations are for R2.0 Bradford Gold™ (glasswool insulation), or R2.0 Bradford Soundscreen™ (rockwool insulation)  |
|        | Calculations are for R2.0 Bradford Gold™ (glasswool insulation), or R2.0 Bradford Soundscreen™ (rockwool insulation)  |

Source: James M Fricker; Report 107\_E43steel.; Thermal performance calculations to AS/NZS 4859 Parts 1 & 2:2018; Dated 01/09/2020.



# Thermal Properties - Total R Values of Low Rise Multi-Residential Hebel® PowerFloor Systems consisting with Pine Joists

Interfloor Total R values (2nd storey floor/ceiling)

|   |       | Unins      | ulated |              | R2.0 insulated ceiling system type beneath floor |          |       |          |       |          |       |          |       |          |       |       |  |  |
|---|-------|------------|--------|--------------|--|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|-------|--|--|
|   |       | No ceiling |        | With ceiling |  | CSR 6209 |       | CSR 6221 |       | CSR 6217 |       | CSR 6222 |       | CSR 6223 |       | 6220  |  |  |
| Floor Type  | Up    | Down       | Up     | Down         | Up   | Down     | Up    | Down     | Up    | Down     | Up    | Down     | Up    | Down     | Up    | Down  |  |  |
| 75mm Hebel® PowerFloor with Carpet  | R0.94 | R1.04      | R1.16  | R1.34        | R2.93  | R3.25    | R3.02 | R3.35    | R3.01 | R3.33    | R3.04 | R3.37    | R3.14 | R3.46    | R2.93 | R3.29 |  |  |
| 75mm Hebel® PowerFloor with Ceramic Tiles on 50mm concrete topping slab   | R0.70 | R0.80      | R0.92  | R1.10        | R2.71  | R3.01    | R2.81 | R3.11    | R2.79 | R3.09    | R2.82 | R3.12    | R2.92 | R3.22    | R2.69 | R3.05 |  |  |
| 75mm Hebel® PowerFloor with Ceramic Tiles on flexible adhesive            | R0.67 | R0.77      | R0.89  | R1.07        | R2.67  | R2.97    | R2.77 | R3.07    | R2.75 | R3.05    | R2.79 | R3.09    | R2.88 | R3.18    | R2.66 | R3.01 |  |  |
| 75mm Hebel® PowerFloor with Vinyl on masonite                             | R0.67 | R0.77      | R0.89  | R1.07        | R2.68  | R2.98    | R2.77 | R3.07    | R2.75 | R3.05    | R2.79 | R3.09    | R2.88 | R3.19    | R2.66 | R3.01 |  |  |
| 75mm Hebel® PowerFloor with Vinyl on screeded concrete                    | R0.66 | R0.76      | R0.88  | R1.06        | R2.67  | R2.97    | R2.76 | R3.06    | R2.75 | R3.05    | R2.78 | R3.08    | R2.88 | R3.18    | R2.65 | R3.00 |  |  |
| 75mm Hebel® PowerFloor with T&G flooring and nonreflective 35mm air space | R0.91 | R1.06      | R1.14  | R1.34        | R2.92  | R3.27    | R3.01 | R3.37    | R3.00 | R3.35    | R3.03 | R3.39    | R3.13 | R3.48    | R2.91 | R3.29 |  |  |
| 75mm Hebel® PowerFloor with T&G flooring and reflective 35mm air space    | R1.22 | R1.99      | R1.44  | R2.30        | R3.24  | R4.23    | R3.33 | R4.32    | R3.31 | R4.31    | R3.35 | R4.34    | R3.44 | R4.44    | R3.44 | R3.83 |  |  |
| 75mm Hebel® PowerFloor with Tasmanian Oak 3 strip flooring on underlay    | R0.81 | R0.91      | R1.03  | R1.21        | R2.82  | R3.12    | R2.91 | R3.22    | R2.89 | R3.20    | R2.93 | R3.23    | R3.02 | R3.33    | R2.80 | R3.16 |  |  |
| 75mm Hebel® PowerFloor with T&G Hardwood flooring on 12mm plywood         | R0.84 | R0.94      | R1.06  | R1.25        | R2.85  | R3.16    | R2.95 | R3.25    | R2.93 | R3.23    | R2.96 | R3.27    | R3.06 | R3.37    | R2.83 | R3.19 |  |  |

Note: The above table assumes 0.11 (up) or 0.16 (down) floor and ceiling air film resistances per Table 15 of AS/NZS 4859.1:2018.

Ground floor Total R values (exposed subfloor, e.g. car park)

|  |       | Unins      | ulated |              |       |          | R2.0 insulated ceiling system type beneath floor |          |       |          |       |          |       |          |       |       |  |  |
|--|-------|------------|--------|--------------|-------|----------|--|----------|-------|----------|-------|----------|-------|----------|-------|-------|--|--|
|  |       | No ceiling |        | With ceiling |       | CSR 6209 |  | CSR 6221 |       | CSR 6217 |       | CSR 6222 |       | CSR 6223 |       | 6220  |  |  |
| Floor Type   | Up    | Down       | Up     | Down         | Up    | Down     | Up   | Down     | Up    | Down     | Up    | Down     | Up    | Down     | Up    | Down  |  |  |
| 75mm Hebel® PowerFloor with Carpet                                       | R0.91 | R0.96      | R1.13  | R1.26        | R2.90 | R3.17    | R2.99  | R3.27    | R2.98 | R3.25    | R3.01 | R3.29    | R3.11 | R3.38    | R2.90 | R3.21 |  |  |
| 75mm Hebel® PowerFloor with Ceramic Tiles on 50mm concrete topping slab  | R0.67 | R0.72      | R0.89  | R1.02        | R2.68 | R2.93    | R2.78  | R3.03    | R2.76 | R3.01    | R2.79 | R3.04    | R2.89 | R3.14    | R2.66 | R2.97 |  |  |
| 75mm Hebel® PowerFloor with Ceramic Tiles on flexible adhesive           | R0.64 | R0.69      | R0.86  | R0.99        | R2.64 | R2.89    | R2.74  | R2.99    | R2.72 | R2.97    | R2.76 | R3.01    | R2.85 | R3.10    | R2.63 | R2.93 |  |  |
| 75mm Hebel® PowerFloor with Vinyl on masonite                            | R0.64 | R0.69      | R0.86  | R0.99        | R2.65 | R2.90    | R2.74  | R2.99    | R2.72 | R2.97    | R2.76 | R3.01    | R2.85 | R3.11    | R2.63 | R2.93 |  |  |
| 75mm Hebel® PowerFloor with Vinyl on screeded concrete                   | R0.63 | R0.68      | R0.85  | R0.98        | R2.64 | R2.89    | R2.73  | R2.98    | R2.72 | R2.97    | R2.75 | R3.00    | R2.85 | R3.10    | R2.62 | R2.92 |  |  |
| 75mm Hebel PowerFloor with T&G flooring and nonreflective 35mm air space | R0.88 | R0.98      | R1.11  | R1.26        | R2.89 | R3.19    | R2.98  | R3.29    | R2.97 | R3.27    | R3.00 | R3.31    | R3.10 | R3.40    | R2.88 | R3.21 |  |  |
| 75mm Hebel® PowerFloor with T&G flooring and reflective 35mm air space   | R1.19 | R1.91      | R1.41  | R2.22        | R3.21 | R4.15    | R3.30  | R4.24    | R3.28 | R4.23    | R3.32 | R4.26    | R3.41 | R4.36    | R3.41 | R3.75 |  |  |
| 75mm Hebel® PowerFloor with Tasmanian Oak 3 strip flooring on underlay   | R0.78 | R0.83      | R1.00  | R1.13        | R2.79 | R3.04    | R2.88  | R3.14    | R2.86 | R3.12    | R2.90 | R3.15    | R2.99 | R3.25    | R2.77 | R3.08 |  |  |
| 75mm Hebel® PowerFloor with T&G Hardwood flooring on 12mm plywood        | R0.81 | R0.86      | R1.03  | R1.17        | R2.82 | R3.08    | R2.92  | R3.17    | R2.90 | R3.15    | R2.93 | R3.19    | R3.03 | R3.29    | R2.80 | R3.11 |  |  |

Note: The above table assumes air film resistances of 0.11 (up) or 0.16 (down) for floor per Table 15 of AS/NZS 4859.1:2018, and 0.08 (up or down) for exposed ceiling air film resistance.



# **Ground floor Total R values (enclosed subfloor)**

|   |            | Unins | ulated |         | R2.0 insulated ceiling system type beneath floor |          |       |          |       |          |       |          |       |          |       |       |  |
|---|------------|-------|--------|---------|--|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|-------|--|
|   | No ceiling |       | With   | ceiling | CSR  | CSR 6209 |       | CSR 6221 |       | CSR 6217 |       | CSR 6222 |       | CSR 6223 |       | 6220  |  |
| Floor Type  | Up         | Down  | Up     | Down    | Up   | Down     | Up    | Down     | Up    | Down     | Up    | Down     | Up    | Down     | Up    | Down  |  |
| 75mm Hebel® PowerFloor with Carpet  | R1.50      | R1.62 | R1.72  | R1.92   | R3.49  | R3.83    | R3.58 | R3.93    | R3.57 | R3.91    | R3.60 | R3.95    | R3.70 | R4.04    | R3.49 | R3.87 |  |
| 75mm Hebel® PowerFloor with Ceramic Tiles on 50mm concrete topping slab   | R1.26      | R1.38 | R1.48  | R1.68   | R3.27  | R3.59    | R3.37 | R3.69    | R3.35 | R3.67    | R3.38 | R3.70    | R3.48 | R3.80    | R3.25 | R3.63 |  |
| 75mm Hebel® PowerFloor with Ceramic Tiles on flexible adhesive            | R1.23      | R1.35 | R1.45  | R1.65   | R3.23  | R3.55    | R3.33 | R3.65    | R3.31 | R3.63    | R3.35 | R3.67    | R3.44 | R3.76    | R3.22 | R3.59 |  |
| 75mm Hebel® PowerFloor with Vinyl on masonite                             | R1.23      | R1.35 | R1.45  | R1.65   | R3.24  | R3.56    | R3.33 | R3.65    | R3.31 | R3.63    | R3.35 | R3.67    | R3.44 | R3.77    | R3.22 | R3.59 |  |
| 75mm Hebel® PowerFloor with Vinyl on screeded concrete                    | R1.22      | R1.34 | R1.44  | R1.64   | R3.23  | R3.55    | R3.32 | R3.64    | R3.31 | R3.63    | R3.34 | R3.66    | R3.44 | R3.76    | R3.21 | R3.58 |  |
| 75mm Hebel® PowerFloor with T&G flooring and nonreflective 35mm air space | R1.47      | R1.64 | R1.70  | R1.92   | R3.48  | R3.85    | R3.57 | R3.95    | R3.56 | R3.93    | R3.59 | R3.97    | R3.69 | R4.06    | R3.47 | R3.87 |  |
| 75mm Hebel® PowerFloor with T&G flooring and reflective 35mm air space    | R1.78      | R2.57 | R2.00  | R2.88   | R3.80  | R4.81    | R3.89 | R4.90    | R3.87 | R4.89    | R3.91 | R4.92    | R4.00 | R5.02    | R4.00 | R4.41 |  |
| 75mm Hebel® PowerFloor with Tasmanian Oak 3 strip flooring on underlay    | R1.37      | R1.49 | R1.59  | R1.79   | R3.38  | R3.70    | R3.47 | R3.80    | R3.45 | R3.78    | R3.49 | R3.81    | R3.58 | R3.91    | R3.36 | R3.74 |  |
| 75mm Hebel® PowerFloor with T&G Hardwood flooring on 12mm plywood         | R1.40      | R1.52 | R1.62  | R1.83   | R3.41  | R3.74    | R3.51 | R3.83    | R3.49 | R3.81    | R3.52 | R3.85    | R3.62 | R3.95    | R3.39 | R3.77 |  |

Note: The above table assumes air film resistances of 0.11 (up) or 0.16 (down) for both floor and ceiling per Table 15 of AS/NZS 4859.1:2018, plus Ground Thermal Resistance (RGX) of 0.56 (up) or 0.58 (down) of Table K3 of the standard.

| NOTES: | Determinations based upon AS/NZS 4859 Parts 1&2:2018, Thermal insulation materials for buildings.   |
|--------|---|
|        | The results are believed representative at the date of calculation, however the author reserves the right to revise calculations.   |
|        | All Total RT values include the effect of thermal bridging for 45X92 pine joists with 600mm spacing.  |
|        | See individual calc pages for R <sub>Ti</sub> values for the insulation path only. JMF calcs 107.23i-107.29i relate to insulated floors. For uninsulated floors, see JMF calcs 107.23ii-107.29ii. |
|        | Above for 510kg/m³ Hebel® 75mm PowerFloor™ with R=0.375 (for 14% moisture content) based upon CSR Insulation Research Laboratory test report NR-12140 of 9/10/2012                                |
|        | "Up/Down" refers to heat flow direction. (For floors, Up=summer, Down=Winter)   |
|        | "Bare floor, with ceiling" is for one sheet of 13mm GYPROCK Plasterboard (140mm floor joists, 28mm furring channel)   |
|        | CSR 6209 has Bradford Soundscreen™ R2.0 Batts (75mm), 1x13mm GYPROCK  |
|        | CSR 6221 has Bradford Soundscreen™ R2.0 Batts (75mm), 1x13mm GYPROCK FYRCHEK + 1x16mm GYPROCK FYRCHEK   |
|        | CSR 6217 has Bradford Soundscreen™ R2.0 Batts (75mm), 2x13mm GYPROCK FYRCHEK  |
|        | CSR 6222 has Bradford Soundscreen™ R2.0 Batts (75mm), 2x16mm GYPROCK FYRCHEK  |
|        | CSR 6223 has Bradford Soundscreen™ R2.0 Batts (75mm), 3x16mm GYPROCK FYRCHEK  |
|        | CSR 6220 has Bradford Gold™ R2.0 Batts (90mm), 1x16mm GYPROCK FYRCHEK   |
|        | Calculations are for R2.0 Bradford Gold™ (glasswool insulation), or R2.0 Bradford Soundscreen™ (rockwool insulation)  |

Source: James M Fricker; Report 107\_E43pine.; Thermal performance calculations to AS/NZS 4859 Parts 1 & 2:2018; Dated 01/09/2020.



# A4 Manufacturer and manufacturing plant(s)

Certificate number: CM40014-I05-R01

This field is optional. Contact Certificate Holder for details.

#### A5 Installation requirements

Only to be installed by a suitably qualified tradesperson in accordance with CSR Hebel® PowerFloor Houses, Low Rise Multi-Residential & Commercial Floors Design & Installation Guide HELIT017 September 2023.

### A6 Other relevant technical data

No other relevant technical data.

#### **APPENDIX B – EVALUATION STATEMENTS**

### **B1** Evaluation methods

- 1. Acoustic Provisions A5G3(1)(e). Reports from a professional engineer.
- Fire Safety Provisions A5G3(1)(d)&(e). Reports from Accredited Testing Laboratories and a professional engineer.
- 3. Structural Resistance Provisions A5G3(1)(e). Reports from a professional engineer.
- 4. Energy Efficiency Provisions A5G3(1)(e). Reports from a professional engineer.

#### **B2** Reports

- 1. CSIRO; NATA Accreditation No. 165; Report No. FNC12427A; Certificate of Test Combustibility Test for Materials in Accordance with AS 1530.1-1994; Dated 02/09/2019. This certificate confirms that the Hebel® PowerFloor AAC panel is not deemed combustible in accordance with C2D10 and H3D2.
- Warringtonfire Australia Pty Ltd; Nata Accreditation No. 3277; Report No. 26162 Revision 3.7; Fire assessment report Fire resistance performance of CSR Gyprock® Fyrchek™ ceiling systems in accordance with AS1530.4-2014; Dated 27/11/2024. This report provides an FRL Assessment which confirms compliance with C2D2(2) and H3D4.
- 3. James M Fricker Pty Ltd; Report No. 107\_E43pine; Thermal Performance Calculations in accordance with AS/NZS 4859 Parts 1 & 2:2018; Dated 01/09/2020. The calculations of the Hebel® PowerFloor Systems will contribute to the Energy Efficiency performance requirements of (Thermal) for J4D7 and H6D2(1)(b)(i).
- 4. James M Fricker Pty Ltd; Report No. 107\_E43steel; Thermal Performance Calculations in accordance with AS/NZS 4859 Parts 1 & 2:2018; Dated 01/09/2020. The calculations of the Hebel® PowerFloor Systems will contribute to the Energy Efficiency performance requirements of (Thermal) for J4D7 and H6D2(1)(b)(i)
- 5. PACE Structural Pty Ltd; Report No. PS19167; Hebel® PowerFloor Diaphragm Capacity; Dated 11/04/2021. This report provides evidence for compliance with the structural requirements of B1P1(1), (2) (a),(b),(c),(d)& H1P1 (1), (2) (a),(b),(c),(d).
- 6. PACE Structural Pty Ltd; Structural Design Certificate No. PS20116; CSR Hebel AAC Strength Assessment; Dated 23/01/2025. This design certificate contributes to the compliance of the structural requirements of B1P1(1), (2) (a),(b),(c),(d)& H1P1 (1), (2) (a),(b),(c),(d).
- 7. PKA Acoustic Consulting Pty Ltd; Report No. PKA-A071 Version 5; Acoustic Performance Assessment of Hebel® PowerFloor; Dated 18/04/2023. This report provides Acoustic performance assessment of Hebel® PowerFloor Systems which contributes to compliance of F7P1.
- 8. Jensen Hughes Pty Ltd; Report No. 115620-FAR10-r2; Fire Resistance of 75 mm Hebel® PowerFloor System; Dated 27/04/2023. This report provides an FRL Assessment which confirms compliance with C2D2(2) and H3D4.

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