

### CONSTRUCTION CODE REVIEW

Version: 13 May 2013 Amd 1

**Material**  
**Type**  
**Product**  
**Application**

**Rock(stone)wool by ROCKWOOL®**

**Granulate**

**EnergySaver (Masonry)**

**Cavity masonry walls**



**This document:** Reviews performance *required* for *cavity masonry wall compliance with the National Construction Code (NCC) Volume One and Two – Building Code of Australia (BCA).*

**Associated documents:** EnergySaver compliance set [1].

### ASSESSMENT METHODOLOGY

This assessment identifies performance *required* [2] for compliance with the **National Construction Code (NCC) Volume One Building Code of Australia (BCA)** for Class 2 – 9 buildings and **BCA Volume Two** for Class 1 and 10a buildings.

The method used to establish *required* performance is as described in **BCA A0.10/1.0.10 Relevant Performance Requirements**. This *requires* that a detailed review of the *DTS Provisions* to determine the *Performance Requirement(s)* that apply for a nominated *Building Solution*.

- [1] **EnergySaver compliance set**  
Product technical statement  
Product data sheet  
Product performance assessment  
Construction code review

- [2] **BCA defined terms**  
In keeping with NCC protocol, BCA defined terms are shown in italics.

### Relevant DTS Provisions

**Matrix One: BCA Building classification and wall types** (at rear of document) has been used to identify the BCA defined building classifications and wall types that apply for this assessment. These are summarised in Table 1.

Table 1	Building Classification	Wall type	Construction
<b>BCA Volume One</b>	Class 2, 3, 9c Buildings	External, Common & Fire walls	Unreinforced <i>cavity masonry</i>
<b>BCA Volume Two</b>	Class 1 & 10a Buildings	External, Common & Separating walls	

BCA Volume One *DTS Provisions* that have been identified as relevant to unreinforced *cavity masonry* compliance, for the nominated building classifications, are listed in Table 2.

Table 2	BCA Volume One DTS Provisions
Section B <b>Structure</b>	<p>Part B1 Structural provisions</p> <p><b>B1.4 Determination of structural resistance to materials and forms of construction</b></p> <p>(a) Masonry: AS 3700 Masonry structures</p> <p>4.7 Prevention of moisture penetration</p> <p>4.7.1 Cavities</p> <p>In <i>cavity walls</i>...cavities with a minimum width of 40 mm...shall be regarded as being resistant to the passage of moisture from the exposed face through to the inner, unexposed face of the wall.</p> <p>Where insulating material is placed in a <i>cavity</i>, appropriate measures shall be taken to ensure that the moisture resistance of the wall is maintained.</p> <p>4.7.2 Weep holes (and flashings)</p> <p>Weep holes shall be provided wherever it is necessary to drain moisture from or through masonry construction. Where flashings are incorporated...weep holes shall be provided in the masonry course immediately above the flashing, at centres not exceeding 1200 mm.</p> <p>4.7.3 Damp-proof courses and flashings</p> <p>Damp-proof courses or flashings shall be incorporated into masonry construction where it is necessary:</p> <p>(a) to provide a barrier to the upward or downward passage of moisture through masonry,</p> <p>(b) to prevent moisture from entering into the interior of a building from the exterior,</p> <p>(c) to prevent moisture passing across a cavity to the inner leaf, or</p> <p>(d) to shed moisture through masonry to the outer face.</p> <p>11.4 Workmanship, 11.4.7 Building in</p> <p>Wall ties, connectors and accessories that extend across a cavity in the masonry shall be installed in a manner which prevents water from passing across the cavity via those ties, connectors or accessories.</p>

<p>Section C <b>Fire resistance</b></p>	<p>Part C1 Fire resistance and stability</p> <p><i>Fire-resisting</i> Applied to a building element, means having an FRL appropriate for that element.</p> <p><i>Non-combustible</i> (a) Applied to a material – not deemed <i>combustible</i> under AS 1530.1 – Combustibility test for materials.                  (b) Applied to construction or part of a building – constructed wholly of materials that are not deemed <i>combustible</i>.</p> <p><b>C1.10 Fire hazard properties</b>                  (a) The <i>fire hazard properties</i> of the following linings, materials and assemblies in a Class 2 to 9 building must comply with Specification C1.10:                  (ix) Other materials including insulation materials other than <i>sarking-type materials</i>.                  (c) The requirements of (a) do not apply to a material or assembly if it is:                  (xiv) any other material that does not significantly increase the hazards of fire.</p> <p><b>C1.12 Non-combustible materials</b>                  The following materials, though <i>combustible</i> or containing <i>combustible</i> fibres, may be used whenever a <i>non-combustible</i> material is <i>required</i>...</p> <p>Specification C1.10 Fire hazard properties</p> <p><b>2 Application</b>                  Linings, materials and assemblies in Class 2 to 9 buildings must comply with the appropriate provisions described in Table 1:                  • Other materials including insulation – Clause 7</p> <p><b>7 Other materials</b>                  Materials and assemblies in a Class 2 to 9 building...must not exceed:                  • Other materials or locations and insulation materials other than <i>sarking-type materials</i>:                  o <i>Spread of Flame Index</i> – 9.                  o <i>Smoke Developed Index</i> – 8 if the <i>Spread of Flame Index</i> is more than 5.</p>
<p>Section D <b>Access &amp; egress</b></p>	<p>No relevant provisions.</p>
<p>Section E <b>Services</b></p>	<p>No relevant provisions.</p>
<p>Section F <b>Health &amp; amenity</b></p>	<p>Part F1 Damp and weatherproofing</p> <p><b>F1.9 Damp-proofing</b>                  (a)...moisture from the ground...prevented from reaching:                  (i) the lowest floor timbers and the walls above the lowest floor joists, and                  (ii) the walls above the damp-proof course, and                  (iii) the underside of a suspended floor...other than timber, and the supporting beams or girders.</p> <p><b>F1.0 DTS Provisions</b>                  (a) <i>Performance Requirement</i> FP1.4, for the prevention of penetration of water through <i>external walls</i>, must be complied with (this provision notes that there are no <i>DTS Provisions</i> for this <i>Performance Requirement</i> in respect of <i>external walls</i>, but AS 3700 provides <i>DTS Provisions</i>).</p> <p>Part F5 Sound transmission and insulation</p> <p><b>F5.5 Sound insulation rating of walls</b>                  (a) A wall in a Class 2 or 3 building must:                  (i) have an <math>R_w + C_{tr}</math> (airborne) not less than 50, if it separates <i>sole-occupancy units</i>, and                  (ii) have an <math>R_w</math> (airborne) not less than 50, if it separates a <i>sol- occupancy unit</i> from a plant room, lift <i>shaft</i>, stairway, <i>public corridor</i>, public lobby or the like, or parts of a different classification, and                  (iii) comply with F5.3(b) if it separates:                  (A) a bathroom, <i>sanitary compartment</i>, laundry or kitchen in one <i>sole-occupancy unit</i> from a <i>habitable room</i> (other than a kitchen) in an adjoining unit, or                  (B) a <i>sole-occupancy unit</i> from a plant room or lift <i>shaft</i>.                  (c) A wall in a Class 9c <i>aged car building</i> must have an <math>R_w</math> not less than 45 if it separates:                  (i) <i>sole-occupancy units</i>, or                  (ii) a <i>sole-occupancy unit</i> from a kitchen, bathroom, <i>sanitary compartment</i> (not being an associated ensuite), laundry, plant room or utilities room.                  (d) In addition to (c), a wall separating a <i>sole-occupancy unit</i> in a Class 9c <i>aged care building</i> from a kitchen or laundry must comply with F5.3(b).</p> <p>Specification F5.2 Sound insulation for building elements</p> <p><b>1 Scope</b>                  (b) Wall systems listed in Table 2 having a minimum 20mm cavity between 2 separate leaves, with:                  (i) for masonry, where wall ties are required to connect leaves, the ties are of the resilient type...are deemed to be discontinuous construction.</p> <p><b>2 Construction Deemed-to-Satisfy</b>                  Table 2 – Acceptable forms of construction for walls:                  • Masonry – two leaves of 110mm clay brick masonry with:                  o (a) cavity not less than 50mm between leaves, and                  o (b) 13mm cement render on each outside face.</p>

Section G <b>Ancillary provisions</b>	Part G2 Heating appliances, fireplaces, chimneys & flues G2.2 Installation of appliances The installation of a stove, heater or similar appliance in a building must comply with <b>AS/NZS 2918</b> : <b>2.1 Material service temperature</b> – materials used in the installation of a solid fuel burning appliance shall be capable of withstanding the temperatures they are likely to be exposed to in service, without degradation...Materials required...shall have an allowable service temperature as follows: (a) Heat resistant material – greater than 600°C. (b) Heat tolerant material – in the range of 150°C to 600°C.
	Part G5 Construction in bushfire prone areas <b>G5.2 Protection</b> In a <i>designated bushfire prone area</i> : (a) a Class 2 or 3 building, or (b) a Class 10a building or deck associated with a Class 2 or 3 building, must comply with AS 3959.
	<b>AS 3959 – 1.5 Definitions:</b> 1.5.19 Non-combustible – Not deemed combustible as determined by AS 1530.1 or not deemed combustible in accordance with the BCA.
Section H <b>Special use buildings</b>	No relevant provisions.
Section I <b>Maintenance</b>	No relevant provisions.
Section J <b>Energy efficiency</b>	Part J1 Building fabric <b>J1.2 Thermal construction – general</b> (a) Where <i>required</i> , insulation must comply with AS/NZS 4859.1 and be so installed that it: (i) abuts or overlaps or overlaps adjoining insulation other than at supporting members...and the like where the insulation must be against the member, and (ii) forms a continuous barrier with ceilings...floors and the like that inherently contribute to the thermal barrier, and (iii) does not affect the safe or effective operation of a <i>service</i> or fitting. (c) Where <i>required</i> , bulk insulation must be installed so that: (i) it maintains...position and thickness, other than where it crosses...water pipes, electrical cabling...

BCA Volume Two *DTS Provisions* that have been identified as relevant to unreinforced *cavity masonry* compliance, for the nominated building classifications, are listed in Table 3.

Table 3	<b>BCA Volume Two DTS Provisions</b>
Part 3.1 <b>Site preparation</b>	No relevant provisions.
Part 3.2 <b>Footings and slab</b>	No relevant provisions.
Part 3.3 <b>Masonry</b>	Part 3.3.4 Weatherproofing masonry 3.3.4.0 Acceptable construction manual: (a) AS 3700 Masonry structures or (b) AS 4773 Masonry for small buildings Part 1 & 2. <b>AS 4773 Part 1</b> Section 6.8 Mullions 6.8.1 General Vertical DPC shall be used between the external skin and the mullion to prevent moisture penetration. 5.6 Flashings and damp-proof courses To avoid galvanic corrosion, metal flashings shall be compatible with other metals with which they are in contact...or from which they receive water. Section 14 Detailing 14.8 Resistance to moisture penetration, 14.8.2 Damp-proof courses Damp-proof courses (DPCs) shall be provided to protect all masonry against rising ground water. The DPC shall be placed as low as possible in the wall and in no case higher than the finished floor level. <b>AS 4773 Part 2</b> Section 10 Cavity masonry walls, 10.2 Cavity The cavity shall be free of obstructions that would allow the transfer of moisture across the <i>cavity</i> ...Where insulating material is placed in a <i>cavity</i> , precautions shall be taken to maintain the moisture resistance of the wall. The minimum cavity width shall be 35 mm...measured clear from any...insulation...placed within the cavity... 10.5.3 Flashings and weepholes, 10.5.3.1 Cavity flashings Cavity flashings shall be provided at all points where the cavity of a masonry cavity wall is interrupted by a structural element, opening or similar configuration.
Part 3.4 <b>Framing</b>	3.4.1 Sub-floor ventilation The sub-floor space between a suspended floor...and the ground must be in accordance with the following: (b) In double leaf masonry, the cross ventilation opening specified...must be provided in both leaves...with inner-leaf openings being aligned with outer leaf openings to allow an unobstructed flow of air.
Part 3.5 <b>Roof and wall cladding</b>	No relevant provisions.

Part 3.6 <b>Glazing</b>	No relevant provisions.
Part 3.7 <b>Fire safety</b>	<p>Part 3.7.1 Fire separation</p> <p><i>Fire-resisting</i> Applied to a building element, means having an FRL appropriate for that element.</p> <p><i>Non-combustible</i> (a) Applied to a material – not deemed <i>combustible</i> under AS 1530.1 – Combustibility test for materials.</p> <p>(b) Applied to construction or part of a building – constructed wholly of materials that are not deemed <i>combustible</i>.</p> <p>Part 3.7.3 Heating appliances</p> <p><b>3.7.3.4 Installation of insert fireplaces and flues</b>  An insert fireplace and flue must comply with the following:  (d) There must be a clearance of 50mm between the outer flue and adjacent materials.</p> <p>Part 3.7.4 Bushfire areas</p> <p><b>3.7.4.0 Performance Requirement P2.3.4</b> is satisfied for:  (a) a Class 1 building, or  (b) a Class 10a building or deck associated with a Class 1 building,  located in a <i>designated bushfire prone area</i> if it is constructed in accordance with AS 3959.</p> <p><b>AS 3959 – 1.5 Definitions:</b> 1.5.19 Non-combustible – Not deemed combustible as determined by AS 1530.1 or not deemed combustible in accordance with the BCA.</p>
Part 3.8 <b>Health and amenity</b>	<p>Part 3.8.6 Sound insulation</p> <p><b>3.8.6.2 Sound insulation requirements</b>  (a) To provide insulation from airborne sound and impact sound, a <i>separating wall</i> between two or more Class 1 buildings must:  (i) achieve the weighted sound reduction index with spectrum adaption term (Rw+ Ctr) and discontinuous construction requirements, as <i>required</i> by Table 3.8.6.1...</p>
Part 3.9 <b>Safe movement and access</b>	No relevant provisions.
Part 3.10 <b>Additional construction requirements</b>	No relevant provisions.
Part 3.11 <b>Structural design manuals</b>	No relevant provisions.
Part 3.12 <b>Energy efficiency</b>	<p>Part 3.12.1 Building fabric</p> <p><b>3.12.1.1 Building fabric thermal insulation</b>  (a) Where <i>required</i>, insulation must comply with AS/NZS 4859.1 and be so installed that it:  (i) abuts or overlaps or overlaps adjoining insulation other than at supporting members...and the like where the insulation must be against the member, and  (ii) forms a continuous barrier with ceilings...floors and the like that inherently contribute to the thermal barrier, and  (iii) does not affect the safe or effective operation of a <i>service</i> or fitting.  (c) Where <i>required</i>, bulk insulation must be installed so that:  (i) it maintains...position and thickness, other than where it crosses...water pipes, electrical cabling....</p>

## Relevant Performance Requirements

**Matrix Two and Three: DTS Provisions and Performance Requirements** have been used to cross-reference the *DTS Provisions* listed in Tables 2 and 3 with applicable *Performance Requirements*. These are summarised in Table 4.

Table 4	BCA Volume One	BCA Volume Two
<b>Weatherproofing</b>	<b>Part F1</b> FP1 – Damp and weatherproofing	<b>P2.2.2</b> Weatherproofing
	Relevant <b>BCA Volume One</b> and <b>Two</b> <i>Performance Requirements</i> are the same.	
<b>Damp-proofing</b>	<b>Part F1</b> FP1.5 – Damp and weatherproofing	<b>P2.2.3</b> Dampness
	Relevant <b>BCA Volume One</b> and <b>Two</b> <i>Performance Requirements</i> are the same.	
<b>Fire resistance</b>	<b>Section C</b> CP1, CP2, CP4 – Fire resistance	<b>P2.3.1</b> Protection from the spread of fire
	<b>BCA Volume One</b> has the higher <i>Performance Requirement</i> .	
	<b>Part G2</b> GP2.1 – Heating appliances, fireplaces, chimneys, flues	<b>P2.3.3</b> Heating appliances
	Relevant <b>BCA Volume One</b> and <b>Two</b> <i>Performance Requirements</i> are the same.	
	<b>Part G5</b> GP5.1 – Construction in bushfire prone areas	<b>P2.3.4</b> Bushfire areas
Relevant <b>BCA Volume One</b> and <b>Two</b> <i>Performance Requirements</i> are the same.		
<b>Sound insulation</b>	<b>Part F5</b> FP5.2, FP5.5 – Sound transmission and insulation	<b>P2.4.6</b> Sound insulation
	Relevant <b>BCA Volume One</b> and <b>Two</b> <i>Performance Requirements</i> are the same.	
<b>Thermal insulation</b>	<b>Section J</b> JP1 – Energy efficiency	<b>P2.6.1</b> Building
	Relevant <b>BCA Volume One</b> and <b>Two</b> <i>Performance Requirements</i> are the same.	

Table 5 summaries *required* performance that could apply for the nominated building classifications, wall types and construction type.

Table 5	Damp and weatherproof	Fire resisting	Sound insulation	Thermal insulation
External walls	<i>Required</i>	<i>Can be required</i>	<i>Can be required</i>	<i>Can be required</i>
Common walls	<i>Can be required</i>			
Separating walls		<i>Required</i>		
Fire walls		<i>Can be required</i>		

### Notices National Construction Code 2013

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1	13 May 2013	Editorial changes to improve clarity

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## Matrix One: BCA Building classifications and wall types

		BCA defined Building Classifications					
		BCA Volume Two		BCA Volume One			
		Class 1		Class 2	Class 3	Class 4	Class 9c
		Class 1a	Class 1b				
		A single dwelling	A boarding house, guest house, hostel etc (total area ≤300m <sup>2</sup> and ≤12 people resident)	A building containing 2 or more <i>sole occupancy units</i> each being a separate dwelling	A residential building, other than Class 1 or 2, which is a common place of long term or transient living for a number of unrelated persons	A dwelling in a building that is Class 5, 6, 7, 8 or 9 if it is the only dwelling in the building	<i>Age care building</i> means a building for residential accommodation of aged persons...
		A group of two or more attached dwellings separated by a <i>fire-resisting wall</i>	4 or more single dwellings located on one allotment and used for short-term holiday accommodation				
BCA defined Wall Types		Not located above or below another dwelling or another Class of building other than a <i>private garage</i>					
<i>Common wall</i>	A wall that is common to: Vol 1 adjoining buildings Vol 2 adjoining buildings other than Class 1 buildings	✓	✓	✓	✓	✓	✓
<i>Curtain wall</i>	A non-loadbearing external wall that is not a <i>panel wall</i>	Not applicable to Volume Two		Not unreinforced masonry			
<i>External wall</i>	Outer wall of building which is not: Vol 1 <i>common wall</i> Vol 2 <i>separating wall</i>	✓	✓	✓	✓	✓	✓
<i>Fire wall</i>	A wall with an appropriate resistance to the spread of fire that divides a <i>storey</i> or building in <i>fire compartments</i>	Not applicable to Volume Two		✓	✓	✓	✓
<i>Internal wall</i>	Excludes a: Vol 1 <i>common wall</i> or a party wall Vol 2 <i>separating wall, common wall</i> or a party wall	Not required to perform as <i>cavity wall</i>					
<i>Panel wall</i>	A non-loadbearing external wall in frame or similar construction, that is wholly supported at each storey	Not applicable to Volume Two		✓ (Excluded from scope of technical evaluation)			
<i>Separating wall</i>	A wall that is common to adjoining Class 1 buildings	✓	✓	Not applicable to Volume One			







