



Block Wall Systems to Meet BCA Deemed-To-Satisfy Energy Efficiency Provisions

BCA 2010

Preface

The energy efficiency wall systems shown in this brochure only cover Adbri Masonry walls utilising added insulating products to achieve the requirements of the 2010 Building Code of Australia (BCA) Volumes 1 and 2. It should be noted the BCA details many other alternative Deemed-To-Satisfy options to achieve the required energy efficiency including walls with a surface density of not less than 220kg/m². Note many Adbri Masonry products achieve a 220kg/m² surface density. Please contact your Adbri Masonry representative for details.

Adbri Masonry acknowledges the Concrete Masonry Association of Australia's (CMAA) 'Design of Concrete Masonry Building's Manual' in the development of some of the wall systems.

Adbri Masonry also acknowledges CSR Gyprock®, CSR Bradford® and Rmax for providing technical information on their respective products.

Introduction

As of May 2010, the BCA has amended legislation regarding energy efficiency of new buildings in Australia. This brochure is intended as a guide for the design of walls to achieve BCA Deemed-to-satisfy compliance in energy efficiency using Adbri Masonry products.

The wall systems in this brochure are specific to Adbri Masonry products and do not apply to products of other manufacturers

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1.0 BCA Energy Efficiency Requirements for Walls

All wall systems are based on the Deemed-To-Satisfy (DTS) provisions of the Building Code of Australia (BCA) Volume 1 Part J and Volume 2 Part 3.12. These walls are considered to be acceptable forms of construction.

The DTS walls consider the individual thermal resistances of the wall components, which in total must meet the BCA requirement.

The BCA requirements for external walls are summarised in Table 1. Reference should be made to the BCA 2010 for detailed information about different options available to achieve required energy efficiency for each climate zone and concessions including walls with surface density of not less than 220kg/m².

To determine the relevant climate zone, use the map provided in Appendix 1.

Table 1 - External Wall Minimum Total 'R' Values Required

Climate Zone	BCA 2010 Volume One Building Classes 2 ⁴ to 9	Climate Zone	BCA Volume Two Building Classes 1 to 10
	Total minimum 'R' Value ^{1,2} Options		Total minimum 'R' Value ^{1,2} Options
1,2,3	(i) 3.3	(A) BCA Table 3.12.1, 3(a) Options	
	(ii) 2.8 if wall density is not less than 220kg/m ²	1,2,3,4,5	(i) 2.8
	(iii) 1.4 in QLD only ²		(ii) 2.4 if wall shaded with 15° projection (refer BCA Fig 3.12.1.2)
4,5,6	(i) 2.8	6,7	(i) 2.8
	(ii) 2.3 if wall surface density is not less than 220kg/m ²	8	(i) 3.8
	(iii) 1.4 or achieve surface density not less than 220kg/m ² in QLD only ²	OR	
7	(i) 2.8	(B) BCA Table 3.12.1, 3(b) options for external walls with a surface density not less than 220kg/m ²	
	(ii) 1.9 or 220kg/m ² + R1.0 TAS only	1,2,3,4,5,6,7,8	Please refer to table 3.12.1, 3(b) options. These options are too detailed to include in this brochure and include options for masonry internal walls, shading, concrete stat-in-ground glazing, etc.
8	(i) 3.8		
	(ii) 2.8 TAS only ³		

Notes Volume One

1. A sole occupancy unit of a Class 2 building or a Class 4 part of a building must achieve 6 star minimum rating.
2. For Class 2 buildings in Queensland BCA 2009 Volume One still applies.
3. For all Building Classes in Tasmania BCA 2009 Volume One still applies.
4. For Class 2 and Class 4 Buildings in New South Wales subject to BASIX energy provisions of BCA 2009 as varied by the New South Wales appendix in the BCA apply.

2.0 Design of Adbri Masonry block walls for Deemed-to-satisfy energy efficiency

These wall systems are generally used in external wall applications in residential, commercial, industrial, institutional, domestic and high-rise domestic construction or in the renovation of older buildings. Walls systems incorporate single leaf concrete masonry, and where required CSR Bradford® insulation products and CSR Gyprock® Products, or Rmax ExinTEX® polystyrene products.

2.1 Step 1: Establish requirements

2.1.1 Determine applicable climate zone from the BCA climate zone map detailed in Appendix 1.

2.1.2 Using table 1 and the relevant climate zone, select the minimum total R-value required for the relevant climate zone and building class. Note: Walls detailed in this brochure only meet **BCA Option (a)** for each climate zone. Refer to the BCA for other option details including the 220kg/m² surface density and slab on ground options.

2.2 Step 2: Selecting your Adbri Masonry wall system

2.2.1 Using the required minimum total R-value from the relevant climate zone from table 1, select a suitable Adbri Masonry wall system from table 2. This table categorises the requirements of the BCA and details Adbri Masonry wall systems which meet these requirements. Note: There are several Adbri Masonry wall systems available to meet each individual BCA minimum total R-value requirement, listed as wall type T1, T2, T3 or T4. More than one wall system can be selected to allow for direct comparison between wall systems. Choose a system that is most appropriate to your application.

2.2.2 The following information is shown in Table 2 for each wall type

- Typical layout of the wall system
- BCA Requirement being met
- Building class
- Applicable climate zones
- Adbri Masonry Block type/series
- Basic wall details
- Overall wall thickness
- Further information (if applicable)

NOTE: For all wall types i.e. T1, T2, T3, and T4, further information is required to determine the actual wall specifications. These systems include various CSR Bradford® insulation products, CSR Gyprock® products and Rmax exinTEX® polystyrene products as detailed in Step 2.2.3.

2.2.3 For wall types T1 or T2, Table 3 must be used. For wall types T3 or T4, Table 4 must be used.

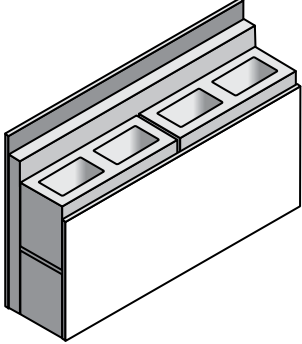
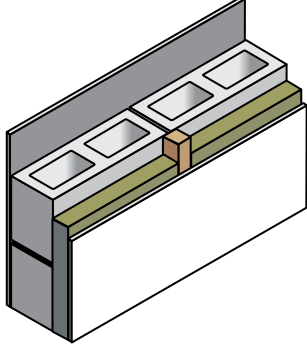
These tables give the following details of the wall system specifications.

- Building class
- Applicable climate zone
- External wall lining
- Block series
- Sarking
- Insulation and frame
- Internal wall lining
- Total R-value of wall
- Minimum wall thickness
- Additional wall thickness (for thicker block series)

3.0 General design/construction considerations

- Gyprock® may be directly applied to the masonry substrate, screw fixed to metal furring channels that are fixed to the masonry, or alternatively fixed to a separate stud frame.
- Refer to manufacturer for all related loading bearing and non-load bearing stud design information.
- Rmax ExinTEX® polystyrene can be fixed direct to the external masonry face.
- All block wall elements are to be designed in accordance with AS3700 Masonry Structures.
- Some walling systems incorporate an insulated cavity to provide improved thermal performance. The provision of a cavity also allows the inclusion of services such as water pipes.
- No allowance is made for thermal bridging of cavity ties or furring channels.
- For fire and sound properties refer to the Adbri Masonry Fire and Sound Insulation of Concrete Besser block masonry brochure.

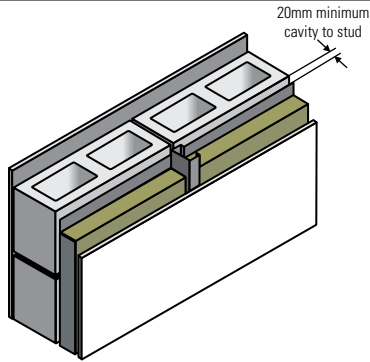
Table 2 - Adbri Masonry Wall System Specifications

Wall Type	T1	T2
Typical Layout		
BCA Requirement being met	Total R-Value 1.9/2.8/3.8	Total R-Value 1.9
Building Class	Applicable Climate Zones	Applicable Climate Zones
BCA 2010 Volume One Class 1 to 9 buildings, <i>refer to notes 1, 2, 3 below</i>	All, but will depend on which Adbri Masonry wall version is used, e.g. V1, V2 or V3. Refer to Table 3	1, 2, 3, 5, 6 QLD only for class 2 buildings only ² 7 Tas only ³
BCA 2010 Volume Two Class 1 and 10 Buildings <i>refer to notes 4, 5, 6 below</i>	All, but will depend on which Adbri Masonry wall version is used, e.g. V1, V2 or V3. Refer to Table 3	2,5 NSW only ⁴
Adbri Masonry Block Type/Series	150 series 200 series	150 series 200 series
Basic Wall Details	Rmax Exintex polystyrene insulation direct fixed to the external face, Gyprock [®] direct fixed to the internal face	Stud one side direct fixed, Gyprock [®] lined internal side, with Glasswool / Rockwool / Polystyrene insulation in cavity
Overall Wall Thickness	Varies 228mm - 308mm depending on block series	234mm
Further Information	Table 3	Table 3

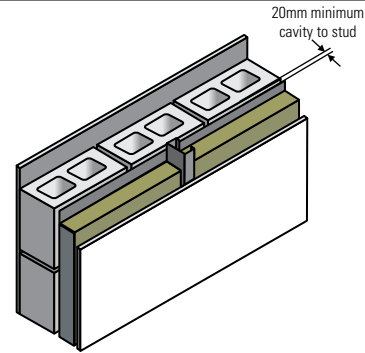
Notes Volume One

1. For sole occupancy unit of a Class 2 building or a Class 4 part of a building must achieve 6 stars minimum rating.
2. For Class 2 building in Queensland energy provisions of BCA 2009 Volume One still apply. Note also some 220kg/m² surface density options apply, refer to BCA 2010.
3. For Tasmania BCA 2009 Volume One energy provisions still applies to all building classes. Note also some 220kg/m² surface density options apply, refer to BCA 2010.

T3



T4



Total R-Value 2.8/3.8

Total R-Value 2.5/3.5

Applicable Climate Zones

Applicable Climate Zones

All, but will depend on which Adbri Masonry wall version is used, e.g. V1 or V2. Refer to Table 4

All, except in climate zone B in NSW and VIC and which Adbri Masonry wall version is used eg V1 or V2 refer to Table 4

All, but will depend on which Adbri Masonry wall version is used, e.g. V1 or V2. Refer to Table 4

All, but will depend on which Adbri Masonry wall version is used, e.g. V1 or V2. Refer to Table 4

150 series
200 seriesQuickbrick
Twinbrick
100 series
120 series

Stud one side 20mm off masonry, Gyprock® lined internal side, Glasswool / Rockwool insulation in cavity

Stud one side 20mm off masonry. Gyprock® lined internal side, Glasswool / Rockwool insulation in cavity

Varies 247mm - 273mm depending on block series

Varies 197mm - 223mm depending on block series

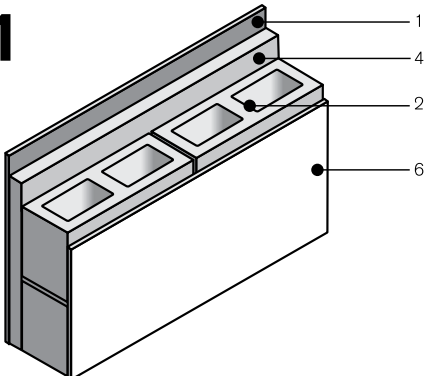
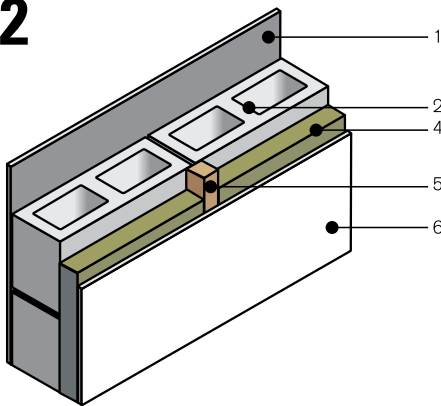
Table 4

Table 4

Notes Volume Two

4. For New South Wales Class 1 and 10 building subject to BASIX, BCA 2009 energy provisions apply.
5. For Tasmania BCA 2009 Volume Two energy provisions still apply to Class 1 and 10 buildings.
6. For Victoria BCA 2009 Volume Two energy provisions still apply to Class 1 and 10 buildings ie Zone 4 R2.2.
7. Refer to BCA 2010 Table 3.12.1.3b for options for each part of an external wall with a surface density of not less than 220kg/m³.

Table 3 - Detailed Specifications for T1 & T2

Typical Layout	Wall Type	Building Class	Applicable Climate Zones	External Wall Linings ³	
				1	2
<h2>T1</h2>  <p>Additional notes</p> <ul style="list-style-type: none"> • 150 and 200 series block only • Exterior wall linings applied strictly in accordance with manufactures guidelines • Polystyrene attached with adhesive supplied by Sika or equivalent in accordance with manufacturer guidelines • Single leaf masonry wall • Min. 10mm Gyprock® direct fixed to masonry using 'CSR Gyprock Masonry Adhesive' 	Version 1	Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
		Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
		Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
	Version 2	Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
		Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
		Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
	Version 3	Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
		Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
		Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
<h2>T2</h2>  <p>Additional notes</p> <ul style="list-style-type: none"> • 150 and 200 series block only • Exterior wall linings applied strictly in accordance with manufactures guidelines • Single leaf masonry wall • Min. 51mm steel/timber stud, 20mm min. off masonry fixed with ties • Insulation in furring channel cavity, as per table • Min. 10mm Gyprock® fixed to studs 	Version 1	Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 2 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
		Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2 Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See Note 3 below	Render, Texturecoat or Equivalent	150mm series or 200mm series

Climate Zone Notes

1. All zones but will depend on which Adbri Masonry wall version is used e.g. V1, V2 or V3. Refer Table 2.
2. Zones 1, 2, 3, 5 and 6 QLD only for Class 2 buildings only. Also Zone 7 TAS only. Refer Table 2.
3. Zones 2 and 5 NSW only. Refer to Table 2.

Wall Components			Total R-Value ¹ of wall (m ² K/W)	Min. Wall Thickness ² (mm)	Additional Thickness (mm)
3 Sarking	4 and 5 Insulation and Frame	6 Internal Wall Lining			
None	Rmax Exintex Polystyrene 60mm thick	Min. 10mm Gyprock®	1.9	228	+ 50mm for 200mm series if not using 150mm series
None	Rmax Exintex Polystyrene 60mm thick	Min. 10mm Gyprock®	1.9	228	+ 50mm for 200mm series if not using 150mm series
None	Rmax Exintex Polystyrene 94mm thick	Min. 10mm Gyprock®	2.8	262	+ 50mm for 200mm series if not using 150mm series
None	Rmax Exintex Polystyrene 94mm thick	Min. 10mm Gyprock®	2.8	262	+ 50mm for 200mm series if not using 150mm series
None	Rmax Exintex Polystyrene 132mm thick	Min. 10mm Gyprock®	3.8	300	+ 50mm for 200mm series if not using 150mm series
None	Rmax Exintex Polystyrene 132mm thick	Min. 10mm Gyprock®	3.8	300	+ 50mm for 200mm series if not using 150mm series
None	For Steel Studs 51mm min. use <ul style="list-style-type: none"> • CSR Bradford Glasswool Partition Batts 75mm (R1.5) or • CSR R1.6 Bradford Rockwool Soundscreen Partition Batts 64mm For Timber Studs 51mm min. use <ul style="list-style-type: none"> • CSR R1.5 Bradford Glasswool Wall Batts 75mm or • CSR R1.6 Bradford Rockwool Soundscreen Wall Batts 64mm 	Min. 10mm Gyprock®	1.9	234	+ 50mm for 200mm series if not using 150mm series
None	For Steel Studs 51mm min. use <ul style="list-style-type: none"> • CSR Bradford Glasswool Partition Batts 75mm (R1.5) or • CSR R1.6 Bradford Rockwool Soundscreen Partition Batts 64mm For Timber Studs 51mm min. use <ul style="list-style-type: none"> • CSR R1.5 Bradford Glasswool Wall Batts 75mm or • CSR R1.6 Bradford Rockwool Soundscreen Wall Batts 64mm 	Min. 10mm Gyprock®	1.9	234	+ 50mm for 200mm series if not using 150mm series

General Notes

1. All listed Total R-values are inclusive of 0.15m²K/W to account for thermal effect of inside and outside airfilms.
2. The minimum wall thickness is based on using the thinnest available block.
3. External wall linings are based on a 13mm thickness.

Table 4 - Detailed Specifications for T3 & T4

Typical Layout	Wall Type	Building Class	Applicable Climate Zones	External Wall Lining ³	
				1	2
<h2>T3</h2> <p>20mm minimum cavity to stud</p> <p>1 2 3 4 5 6</p> <p>Additional notes:</p> <ul style="list-style-type: none"> • 150 and 200 series block only • Exterior wall linings applied strictly in accordance with manufactures guidelines • Single leaf masonry wall • Min. 64mm steel/timber stud framing at 600mm max. centres, 20mm min. cavity between stud and wall • Insulation in stud cavity, as per table • Min. 10mm Gyprock[®] fixed to studs 	Version 1	Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2	See note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
		Volume Two Building Class 1 and 10, refer to notes 4, 5, 6 bottom of Table 2	See note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
	Version 2	Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2	See note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
		Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See note 1 below	Render, Texturecoat or Equivalent	150mm series or 200mm series
<h2>T4</h2> <p>20mm minimum cavity to stud</p> <p>1 2 3 4 5 6</p> <p>Additional notes:</p> <ul style="list-style-type: none"> • 100, 120, Quickbrick, Twinbrick series block only • Exterior wall linings applied strictly in accordance with manufactures guidelines • Concrete masonry veneer • Min. 64mm steel/timber stud framing at 600mm max. centres, 20mm min. cavity between stud and wall • Insulation in stud cavity, as per table • Min. 10mm Gyprock[®] fixed to studs 	Version 1	Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2	See note 2 below	Render, Texturecoat or Equivalent	Quickbrick, Twinbrick, 100mm series or 120mm series
		Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See note 2 below	Render, Texturecoat or Equivalent	Quickbrick, Twinbrick, 100mm series or 120mm series
	Version 2	Volume One Building Class 2 to 9, for Class 2 refer to notes bottom of Table 2	See note 3 below	Render, Texturecoat or Equivalent	Quickbrick, Twinbrick, 100mm series or 120mm series
		Volume Two Building Class 1 and 10, refer to notes bottom of Table 2	See note 3 below	Render, Texturecoat or Equivalent	Quickbrick, Twinbrick, 100mm series or 120mm series

Climate Zone notes

1. All zones, but will depend on which Adbri Masonry wall version is used e.g. V1 or V2. Refer to Table 2.
2. All zones, except in zone 8 in NSW and VIC and which Adbri Masonry wall version is used e.g. V1 or V2. Refer to Table 2.
3. All zones, but will depend on which Adbri Masonry wall version is used e.g. V1 or V2. Refer to Table 4.

Wall Components			Total R-Value ¹ of wall (m ² K/W)	Min. Wall Thickness ² (mm)	Additional Thickness (mm)
3 Sarking	4 and 5 Insulation and Frame	6 Internal Wall Lining			
CSR Enviroseal Wall Wrap, airspace >20mm	For Steel Studs 51mm min. use • CSR Bradford Glasswool Partition Batts 75mm (R1.5) or • CSR R1.6 Bradford Rockwool Soundscreen Partition Batts 64mm	Min. 10mm Gyprock®	2.8	247	+ 50mm for 200mm series if not using 150mm series
CSR Enviroseal Wall Wrap, airspace >20mm	For Timber Studs 51mm min. use • CSR R1.5 Bradford Glasswool Wall Batts 75mm or • CSR R1.6 Bradford Rockwool Soundscreen Wall Batts 64mm	Min. 10mm Gyprock®	2.8	247	+ 50mm for 200mm series if not using 150mm series
CSR Enviroseal Wall Wrap, airspace >20mm	Timber Studs only 90mm min. use CSR R2.5 Bradford Rockwool Soundscreen Wall Batt 88mm	Min. 10mm Gyprock®	3.8	273	+ 50mm for 200mm series if not using 150mm series
CSR Enviroseal Wall Wrap, airspace >20mm	Timber Studs only 90mm min. use CSR R2.5 Bradford Rockwool Soundscreen Wall Batt 88mm	Min. 10mm Gyprock®	3.8	273	+ 50mm for 200mm series if not using 150mm series
CSR Enviroseal Wall Wrap, airspace >20mm	For Steel Studs 51mm min. use • CSR Bradford Glasswool Partition Batts 75mm (R1.5) or • CSR R1.6 Bradford Rockwool Soundscreen Partition Batts 64mm	Min. 10mm Gyprock®	2.5	197	+ 20mm for Quickbrick, Twinbrick or 120mm series if not using 120mm series
CSR Enviroseal Wall Wrap, airspace >20mm	For Timber Studs 51mm min. use • CSR R1.5 Bradford Glasswool Wall Batts 75mm or • CSR R1.6 Bradford Rockwool Soundscreen Wall Batts 64mm	Min. 10mm Gyprock®	2.5	197	+ 20mm for Quickbrick, Twinbrick or 120mm series if not using 120mm series
CSR Enviroseal Wall Wrap, airspace >20mm	Timber Studs only 90mm min. use CSR R2.5 Bradford Rockwool Soundscreen Wall Batt 88mm	Min. 10mm Gyprock®	3.5	223	+ 20mm for Quickbrick, Twinbrick or 120mm series if not using 120mm series
CSR Enviroseal Wall Wrap, airspace >20mm	Timber Studs only 90mm min. use CSR R2.5 Bradford Rockwool Soundscreen Wall Batt 88mm	Min. 10mm Gyprock®	3.5	223	+ 20mm for Quickbrick, Twinbrick or 120mm series if not using 120mm series

General notes

1. All listed Total R-values are inclusive of 0.15m²K/W to account for thermal effect of inside and outside airfilms.
2. The minimum wall thickness is based on using the thinnest available block.
3. External wall linings are based on a 13mm thickness.

Glossary

Building Classes

Class 1

One or more buildings which in association constitute

- (a) Class 1a - single dwelling house
 - (i) a detached house; or
 - (ii) one or more attached dwellings, each being a building, separated by a fire-resisting wall, including a row house, terrace house, town house or villa unit; or
- (b) Class 1b - boarding house, guest house, hostel or the like with a total floor area not exceeding 300 m² and in which not more than 12 persons would ordinarily be resident, which is not located above or below another dwelling or another Class of building other than a private garage.

Class 2

A building containing 2 or more sole-occupancy units each being a separate dwelling.

Class 3

A residential building, other than a building of Class 1 or 2 which is a common place of long term or transient living for a number of unrelated persons, including

- (a) a boarding house, guest house, hostel, lodging-house or backpackers accommodation; or
- (b) a residential part of an hotel or motel; or
- (c) a residential part of a school; or
- (d) accommodation for the aged, disabled or children; or
- (e) a residential part of a health-care building which accommodates members of staff.
- (f) a residential part of a Detention Centre for the accommodation of the inmates of the centre.

Class 4

A dwelling in a building that is Class 5, 6, 7, 8 or 9 if it is the only dwelling in the building.

Class 5

An office building used for professional or commercial purposes, excluding buildings of Class 6, 7, 8, or 9.

Class 6

A shop or other building for the sale of goods by retail or the supply of services direct to the public, including -

- (a) an eating room, cafe, restaurant, milk or soft-drink bar; or,
- (b) a dining room, bar, shop or kiosk part of a hotel or motel; or
- (c) a hairdresser's or barber's shop, public laundry, or 'undertaker's establishment; or
- (d) market or sale room, showroom, or service station.

Class 7

A building which is -

- (a) a public carpark; or
- (b) for storage, or display of goods or produce for sale by wholesale.

Class 8

A laboratory, or a building in which a handicraft or process for the production, assembling, altering, repairing, packing, finishing, or cleaning of goods or produce is carried on for trade, sale or gain.

Class 9

A building of a public nature -

- (a) Class 9a - a health-care building; including those parts of the building set aside as a laboratory; or
- (b) Class 9b - an assembly building, including a trade workshop, laboratory or the like in a primary or secondary school, but excluding any other parts of the building that are of another Class.
- (c) Class 9c - an aged care building

Class 10

A non-habitable building or structure -

- (a) Class 10a - a non-habitable building being a private garage, carport, shed, or the like; or
- (b) Class 10b - a structure being a fence, mast, antenna, retaining or free-standing wall, swimming pool, or the like.

Climate Zone means an area defined in Appendix 1 for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

Conditioned Space means a space within a building that is heated or cooled by the building's domestic services, excluding a inhabitable room in which a heater with a capacity of not more than 1.2 K/W installed.

Deemed to Satisfy Provisions means provisions which are deemed to satisfy the Performance Requirements

Envelope means the parts of a building's fabric that separate a conditioned space or habitable room from

- (a) the exterior of the building, or
- (b) a non-conditioned space (other than a space through which conditioned air is being exhausted such as a cleaner's room, chemical storage room or exhaust riser) including-
 - (i) The floor of a rooftop plant room, lift machine room of the like; and
 - (ii) The floor above a carpark or warehouse; and
 - (iii) The common wall with a carpark, warehouse or the like

External Wall means an outer wall of a building which is not a common wall.

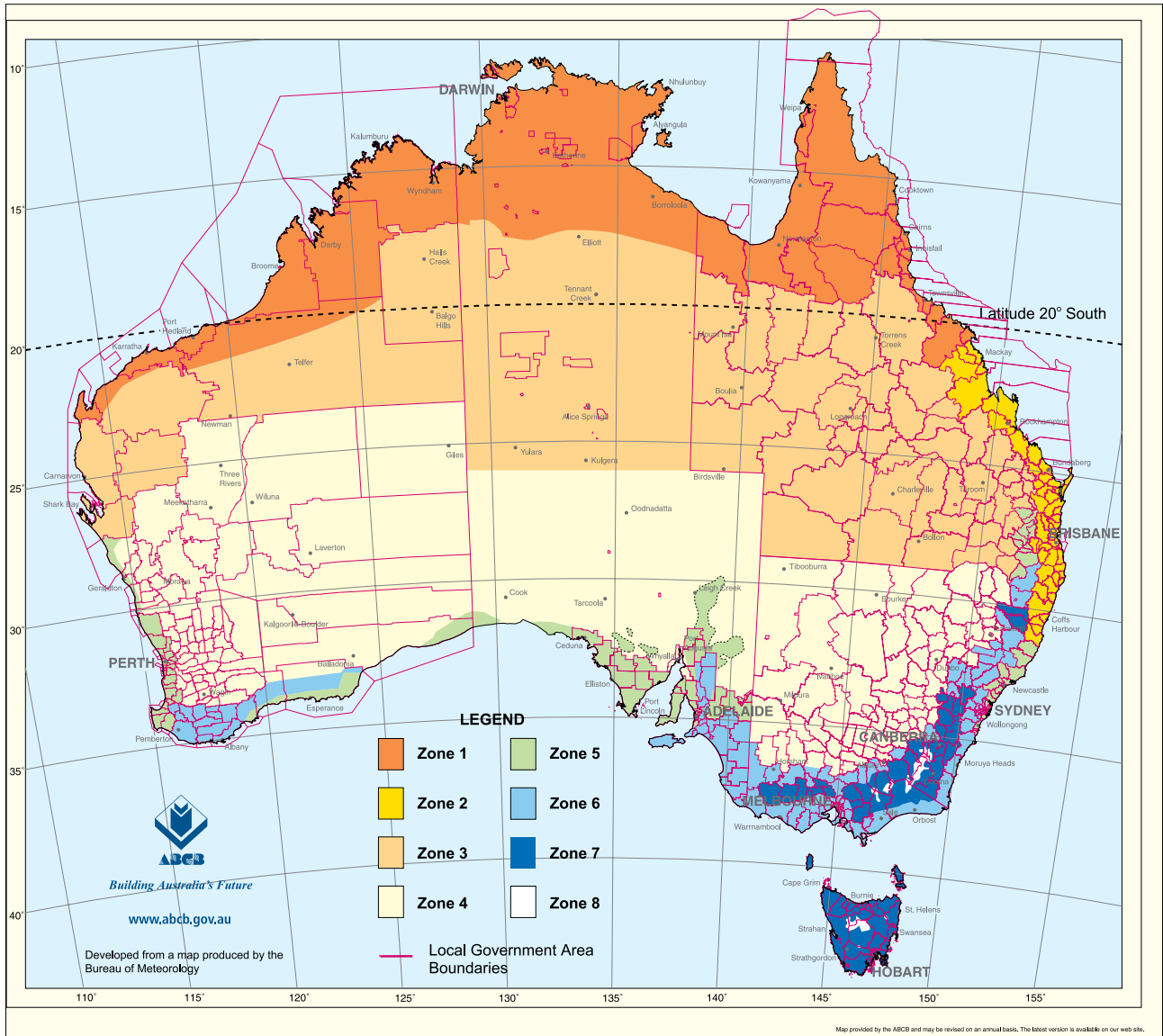
R-Value means the thermal resistance ($m^2 K/W$) of a component calculated by dividing its thickness by its thermal conductivity.

Reflective insulation means a building membrane with a reflective surface such as a reflective foil laminate, reflective barrier, foil batt or the like capable of reducing radiant heat flow.

Sarking-type material means a material such as a reflective foil or other flexible membrane of a type normally used for a purpose such as water proofing, vapor proofing or thermal reflectance.

Total R-Value means the sum of the R-values of the individual component layers in a composite element including any air spaces and associated surface resistances.

Appendix 1: Australian Climate Zones



Note: This map is provided by the ABCB and may be revised on an annual basis. The latest version is available from www.abcb.gov.au

Climate Zones for Various Locations

State / Territory	Location	Climate Zones	Location	Climate Zones	Location	Climate zones	Location	Climate Zones
ACT	Canberra	7						
NSW	Albury	4	Cobar	4	Lord Howe Island	2	Tamworth	4
	Armidale	7	Coffs Harbour	2	Moree	4	Thredbo	8
	Batemans Bay	6	Dubbo	4	Newcastle	5	Wagga Wagga	4
	Bathurst	6	Goulburn	7	Nowra	6	Williamtown	5
	Bega	6	Grafton	2	Orange	7	Wollongong	5
	Bourke	4	Griffith	4	Port Macquarie	5	Yass	6
	Broken Hill	4	Ivanhoe	4	Sydney East	5		
	Byron Bay	2	Lismore	2	Sydney West	6		
NT	Alice Springs	3	Elliot	3	Renner Springs	3		
	Darwin	1	Katherine	1	Tennant Creek	3		
QLD	Birdsville	3	Cunnamulla	3	Maryborough	2	Toowoomba	5
	Brisbane	2	Longreach	3	Mount Isa	3	Torens Creek	3
	Bundaberg	2	Gladstone	2	Normanton	1	Townsville	1
	Cairns	1	Labrador	2	Rockhampton	2	Warwick	5
	Cooktown	1	Mackay	2	Roma	3	Weipa	1
SA	Adelaide	5	Kingscote	6	Marree	4	Port Lincoln	5
	Bordertown	6	Leigh Creek	4	Mount Gambier	6	Renmark	5
	Ceduna	5	Lobethal	5	Murray Bridge	6	Tarcoola	4
	Cook	4	Loxton	5	Oodnadatta	4	Victor Harbour	6
	Elliston	5	Naracoorte	6	Port Augusta	4	Whyalla	4
TAS	Burnie	7	Flinders Island	7	Launceston	7	Rossarden	7
	Bicheno	7	Hobart	7	New Norfolk	7	Smithton	7
	Deloraine	7	Huonville	7	Oatlands	7	St Marys	7
	Devonport	7	Kind Island	7	Orford	7	Zeehan	7
VIC	Anglesea	6	Bright	7	Horsham	6	Swan Hill	4
	Ararat	7	Colac	6	Melbourne	6	Traralgon	6
	Bairnsdale	6	Dnadengong	6	Mildura	4	Wangaratta	4
	Ballarat	7	Echuca	4	Portland	6	Warrnambool	6
	Bendigo	6	Hamilton	7	Shepparton	4		
WA	Albany	6	Cocos Island	1	Kalgoorlie-Boulder	4	Port Hedland	1
	Balladonia	4	Derby	1	Karratha	1	Wagin	4
	Broome	1	Esperance	5	Meekatharra	4	Wyndham	1
	Bunbury	5	Exmouth	1	Northam	4		
	Carnarvon	3	Geraldton	5	Pemberton	6		
	Christmas Island	1	Halls Creek	3	Perth	5		

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