

TECHNICAL NOTE

Version: **Original**

Subject Thermal (Energy Efficiency)
Topic Total R-Value of cavity masonry



This document: Summarises the *Total R-Value* achieved for various *cavity masonry* configurations when EnergySaver Cavity Wall Insulation (EnergySaver) is installed.

Associated documents: EnergySaver Compliance Set [1], Technical Notes [2].

COMPLIANCE

BCA Volume One A1.1 Definitions and BCA Volume Two Part 3.12 Definitions state that *Total R-Value* [3] means the sum of the *R-Values* of the individual component layers in a composite element including any building material, insulating material, airspace and associated surface resistances.

For *cavity masonry*, the BCA provides two options for determining the *Total R-Value* used:

- **BCA Volume Two Figure 3.12.1.3 (e)**, or
- **BCA Volume One Specifications J1.2 and J1.5**.

The **BCA Volume Two** option provides a generic *Total R-Value* because the R0.69 value can be used when there are two leaves of minimum 90mm thick clay masonry with plasterboard or render internally.

[1] EnergySaver Compliance Set
 Product technical statement
 Product data sheet
 Product performance assessment
 Construction code review

Table 1	BCA Volume Two description	R-Value				
Figure 3.12.1.3(e) <i>less</i>	Cavity clay masonry	0.69				
	Air space, non-reflective unventilated	(0.17)				
<i>plus Added insulation</i>	EnergySaver installed at 40 kg/m ³ (nominal) density with a cavity width of:	50mm (nominal)	1.32			
		60mm (nominal)		1.58		
		65mm (nominal)			1.71	
		70mm (nominal)				1.84
		75mm (nominal)				1.97
Total R-Value		1.84	2.10	2.23	2.36	2.49

Table 1 shows the *Total R-Value* achieved when EnergySaver is installed into masonry of varying *cavity* widths and when the *R-Value* of the filled air space is deducted.

[2] Technical Notes
Total R-Value of single leaf masonry

The **BCA Volume One** option uses **Specification J1.2** and **J1.5** prescribed *R-Values* for specific component layer materials. Table 2 shows the *Total R-Value* achieved when EnergySaver is installed into varying *cavity* widths for the nominated layer components, and illustrates how this method could be applied if other materials layers have been specified.

[3] BCA defined terms
 Words in italics are BCA defined.

Table 2	Description of individual component layers of <i>cavity masonry</i>	R-Value of individual component layers									
		Face masonry					Rendered masonry				
Outdoor air film	Wind speed 7m/s	0.04					0.04				
External render	Cement render (1 cement : 4 sand), 1570 kg/m ³ , 10mm thick (nominal)						0.02				
External masonry	Face brick	110mm clay bwk: 1430 kg/m ³ , 2.75 kg/bk					0.20				
	Render block	90mm clay block: 1430 kg/m ³					0.16				
Added insulation	EnergySaver Cavity Wall Insulation: 40 kg/m ³ (nominal) density, installed cavity width:	50mm (nominal)	1.32				1.32				
		60mm (nominal)		1.58				1.58			
		65mm (nominal)			1.71				1.71		
		70mm (nominal)				1.84				1.84	
		75mm (nominal)					1.97				1.97
Internal masonry	90mm clay block: 1430 kg/m ³	0.16					0.16				
Internal render	Cement render (1 cement : 4 sand), 1570 kg/m ³ , 10mm thick (nominal)	0.02					0.02				
Indoor air film	Still air	0.12					0.12				
Total R-Value		1.86	2.12	2.25	2.38	2.51	1.84	2.10	2.23	2.36	2.49

Drawings shown on the next page provide an EnergySaver installation detail for the above.

Document notices

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TYPICAL INSTALLATION DETAIL

For construction where there is:

Cavity masonry

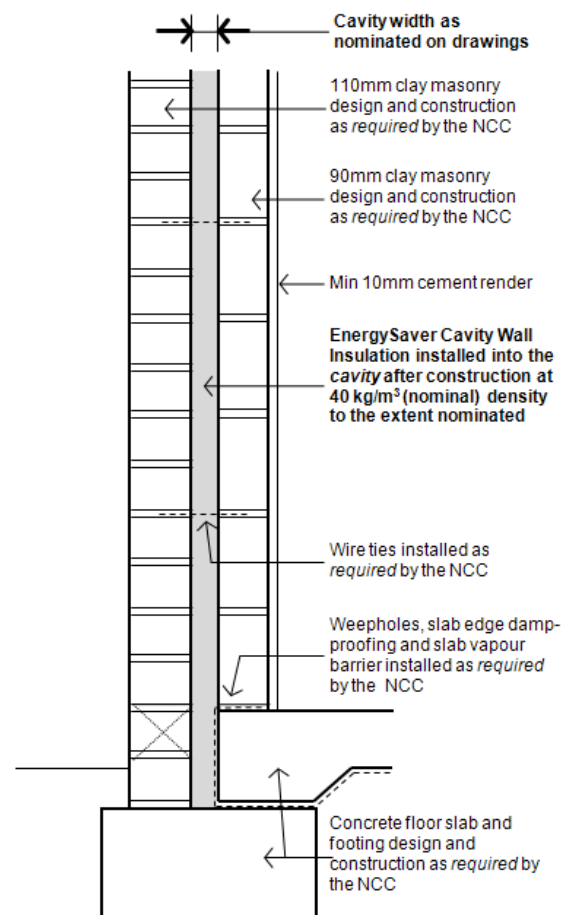
110mm face clay masonry external leaf

Minimum 90mm clay masonry internal leaf

Minimum 10mm cement render to the inside face

Added insulation:

EnergySaver Cavity Wall Insulation



TYPICAL INSTALLATION DETAIL

For construction where there is:

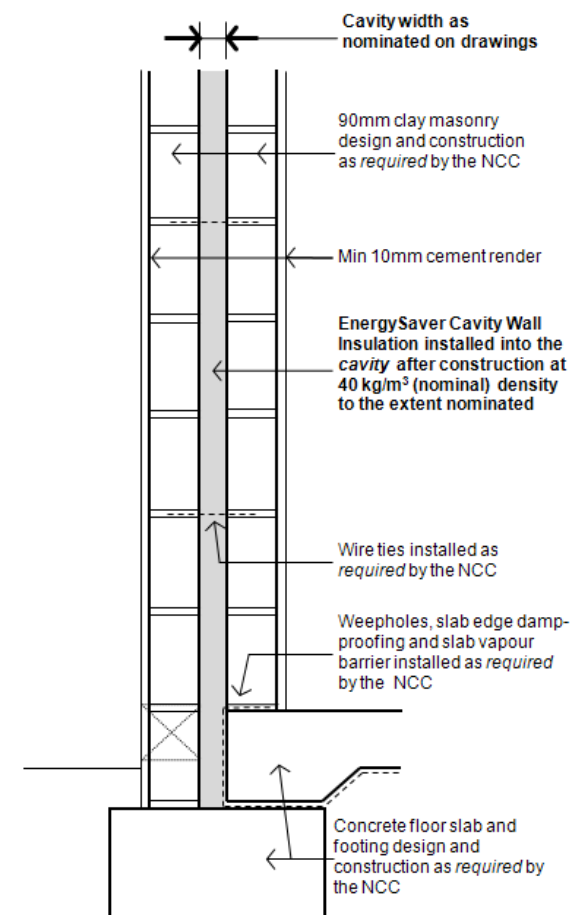
Cavity masonry

Minimum 90mm clay masonry to external and internal leaves

Minimum 10mm cement render to the outside and inside faces

Added insulation:

EnergySaver Cavity Wall Insulation



Note 1: Building design and construction generally – EnergySaver Cavity Wall Insulation can be installed into new and existing masonry *cavities*. For new buildings, installation can take place before or after roof cover to suit your building program. Installation is limited to the building classifications, wall types and construction shown in the Product Technical Statement, and presumes that the masonry is National Construction Code (NCC) compliant and that the *cavity* is clean. There are no other extra over masonry design or masonry construction requirements.

Note 2: Evidence of NCC compliance – refer to the EnergySaver Compliance Set [1].