

Building Code Insulation Requirements for Residential Construction

The Government's previously-announced increases in thermal insulation requirements for residential construction, take effect for Climate Zone 1 on 30 September 2008. The thickness for Litecrete residential walls increases from 150 mm to 220 mm, making Litecrete even more thermally efficient. Once installed, the walls are virtually complete; all that is required is the internal and external decoration. No need for timber framing, extra insulation, plasterboard, etc. However, in certain situations, Litecrete 150 mm thick panels can be specified with insulation board plus plasterboard fixed to the internal walls. See table below for options.

The upgrade to the Building Code Clause H1 Energy Efficiency defines residential construction under three categories:

1. Non-Solid Construction (timber framed structure with an exterior cladding)
2. Solid Timber Construction (such as "Lockwood" type system)
3. Solid Construction (concrete and masonry)

Litecrete falls into the Solid Construction category. Because of the thermal mass of the concrete (its ability to absorb and slowly dissipate energy) this category has been allocated a dispensation in R-value requirements compared to the other two categories.

The R-value requirements for Solid Construction are as follows:

Climate Zone 1 (Northland, Auckland and Coromandel), R0.8. The previous requirement was R0.6.
Climate Zone 2 (Rest of the North Island except the Volcanic Plateau), R1.0 (previously R0.6).
Climate Zone 3 (South Island and Volcanic Plateau), R1.2 (previously R1.0).

CLAUSE H1 ENERGY EFFICIENCY & INTERNAL MOISTURE

Performance H1.3.1 & H1.3.2

Buildings constructed using the Litecrete lightweight precast concrete system are able to meet the performance requirements for energy efficiency as required by NZBC Clause H1.3.1 and H1.3.2. It should be noted that compliance with NZBC H1 will also include a large number of other factors resulting from the design of the building, all of which have an effect on the energy efficiency of a building. The excellent thermal insulation properties of the Litecrete wall panel system ensures that when used with both an adequate level of ventilation and an appropriate level of ceiling/roof insulation, Litecrete will satisfy the internal moisture provisions of NZBC Clause E3.3.1. Appropriate or adequate levels of ventilation and insulation are provided in the NZBC Acceptable Solution E3/AS1. NZBC Acceptable Solution E3/AS1 Paragraph 1.1.1(b) requires minimum wall R-values for the various climate zones.

Demonstration of Compliance

The Litecrete Lightweight Precast Concrete System has test a report from Curtin University stating an achieved R Value of 0.6 for a 150 mm thick panel. A revised H1 Energy Efficiency Compliance Document was published by the Department of Building & Housing in October 2007. The Solid Construction requirements for each climate zone, and the Litecrete solution, are detailed in the following table:

NZBC Clause H1 – Energy Efficiency Third Edition October 2007

Climate Zones	Minimum Wall R-values	Implementation date of Revised Code	Litecrete Solution
Zone 1 Northland, Auckland and Coromandel Option 1 (a)* Option 1 (b)*	 R0.8 R0.8	 Consents lodged after close of business 29 September 2008	“Solid Construction” 220 mm thick panels (R0.8) “Non-Solid Construction” 150 mm panels with 50 mm Kingspan insulating board glue-fixed to internal face and plasterboard lining (R2.1)
Zone 2 Rest of North Island except Volcanic Plateau Option 2 (a)* Option 2 (b)*	 R1.0 R0.9	 Consents lodged after close of Business 29 June 2008	“Solid Construction” 275 mm thick panels (R1.0) “Non-Solid Construction” 150 mm panels with 50 mm Kingspan insulating board glue-fixed to internal face and plasterboard lining (R2.1)
Zone 3 South Island and Volcanic Plateau Option 3 (a)* Option 3 (b)*	 R1.2 R1.0	 Consents lodged after close of business 30 October 2007	“Solid Construction” 330 mm thick panels (R1.2) “Non-Solid Construction” 150 mm panels with 50 mm Kingspan insulating board glue-fixed to internal face and plasterboard lining (R2.1)

Note: This table shows that Litecrete can be either:

- used in Solid Construction as a complete exterior wall panel, which can be skim-coated on the inside face then plastered or painted, or
- used in a Non-Solid situation as a complete exterior wall panel, using a standard 150 mm thickness, with insulation board glued to the inside face, with plasterboard and a paint system.