

# POLYMAX™

Premium Insulation



## Thermal Design Guide

[www.polymaxinsulation.com.au](http://www.polymaxinsulation.com.au)

by *Martini*



green building council australia  
MEMBER 2010-2011



as seen on [www.ecospecifier.org](http://www.ecospecifier.org)

## Premium Thermal & Acoustic Insulation

### The clean, easy, environmentally responsible choice

- ✓ Safe and eco-friendly
- ✓ Acoustically efficient
- ✓ Thermally efficient
- ✓ Non-allergenic
- ✓ 100% recyclable
- ✓ Guaranteed for life

### Polymax: maximum performance, minimal environmental impact

Developed, tested and made in Australia as part of Martini Industries' own R&D programme. Polymax Products are manufactured from 100% polyester fibre, engineered to deliver significant benefits in thermal and acoustic insulation as well as addressing environmental concerns.

Polymax is one of the greenest insulation products on the market, with independent environmental assessment by Ecospecifier.

Available in batts and rolls in standard or customised sizes for ceilings and wall cavities, Polymax dramatically improves building insulation, reducing energy costs and providing acoustic performance in commercial, residential and specialised projects.

## Environmental Statement

Martini Industries is focused on producing environmentally neutral and recyclable products through sustainable manufacturing processes.

The Polymax range of products are based on thermally bonded polyester fibres, of which a minimum of 80% is made from post consumer PET packaging, such as empty drink bottles.

Benefits to the environment are:

- 100% recyclable.
- High reusable potential.
- No chemicals or resin binders used in the manufacturing process.
- Our products are odourless and contain no harmful volatile organic compounds (VOCs)
- No water is used and no waste is generated in the manufacturing process.
- No ozone-depleting gases are used and no chlorides or ammonia are present in the products.

Independent environmental assessments have been completed by Ecospecifier on Martini's Polymax range of products and we are active members of the Green Building Council of Australia.



## Polymax Insulation Thermal Design Guide

This guide has been designed to simplify the energy efficiency requirements of the The National Construction Code for owner builders, architects, engineers, builders and other design specifiers.

The guide provides information on the Polymax range of thermal insulation products to determine which Polymax product should be used in order to comply with Australian Standard AS 4859.1 and The National Construction Code, for walls, ceilings, floors, and AC ductwork, in all building classes.

### To choose the right Polymax product for your application, establish the following factors:

1. Climate zone (see tables and map over page)
2. Building use (commercial, residential, industrial etc, see list of building classes over page)
3. Building element (wall, floor, ceiling)

#### Important!

Certain State and Territory regulations differ from The National Construction Code minimum requirements for thermal insulation in class 1 buildings, eg. (single dwellings detached or semi detached houses and small guest houses). The National Construction Code minimum requirements are now greater than the current state requirements. Therefore we recommend The National Construction Code minimums be used over individual state requirements.

### Thermal product range

#### Polymax Thermal Batt

All wall, ceiling and floor applications in residential buildings.

#### Polymax Acoustic Thermal Batt

A high performance thermal and acoustic insulation specially designed for use in both internal and external walls and between intermediate and under suspended floors.

#### Polymax Thermal Building Blanket

Foil faced blankets combining thermal insulation with a moisture barrier to prevent condensation in metal roofing, cladding and under concrete slabs.

#### Polymax Absorb

The ultimate in sound insulation providing sound absorption across a broad range of frequencies. Ideal for applications that require premium thermal and acoustic solutions.

#### Polymax Prime

Specifically designed insulation for ceilings and walls in apartments and multi-residential where thermal and acoustic ratings are required.

#### Polymax HVAC

Laminated premium thermal acoustic insulation for rigid ductwork, pipes, tanks and industrial applications.

#### Polymax Thermalflex

Lightweight thermal insulation for flexible air conditioning and heating ducts.

For detailed information on products listed above refer to the relevant Polymax Product Information Sheets and the Polymax Material Safety Data Sheet on our website.

All information in this Design Guide is based on the minimum requirements and deemed to satisfy provisions of The National Construction Code.



## Building Classes Covered by the National Construction Code

The following list is a description of each building class covered by the The National Construction Code.

- Class 1:** Single dwellings, e.g. detached or semi-detached houses, small guesthouses.
- Class 2:** Apartments and any residential building where a Sole Occupancy Unit (SOU) is located above another SOU.
- Class 3:** Accommodation – hotels, motels.
- Class 4:** Dwellings within Class 5 – 9 buildings, e.g. caretaker's residence.
- Class 5:** Offices – buildings dedicated to office use.

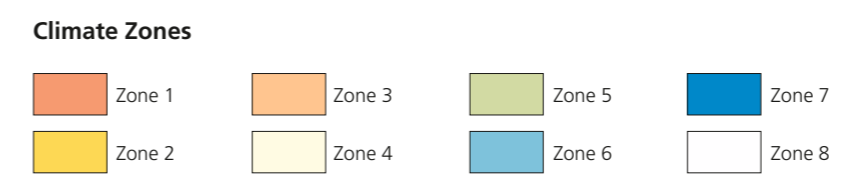
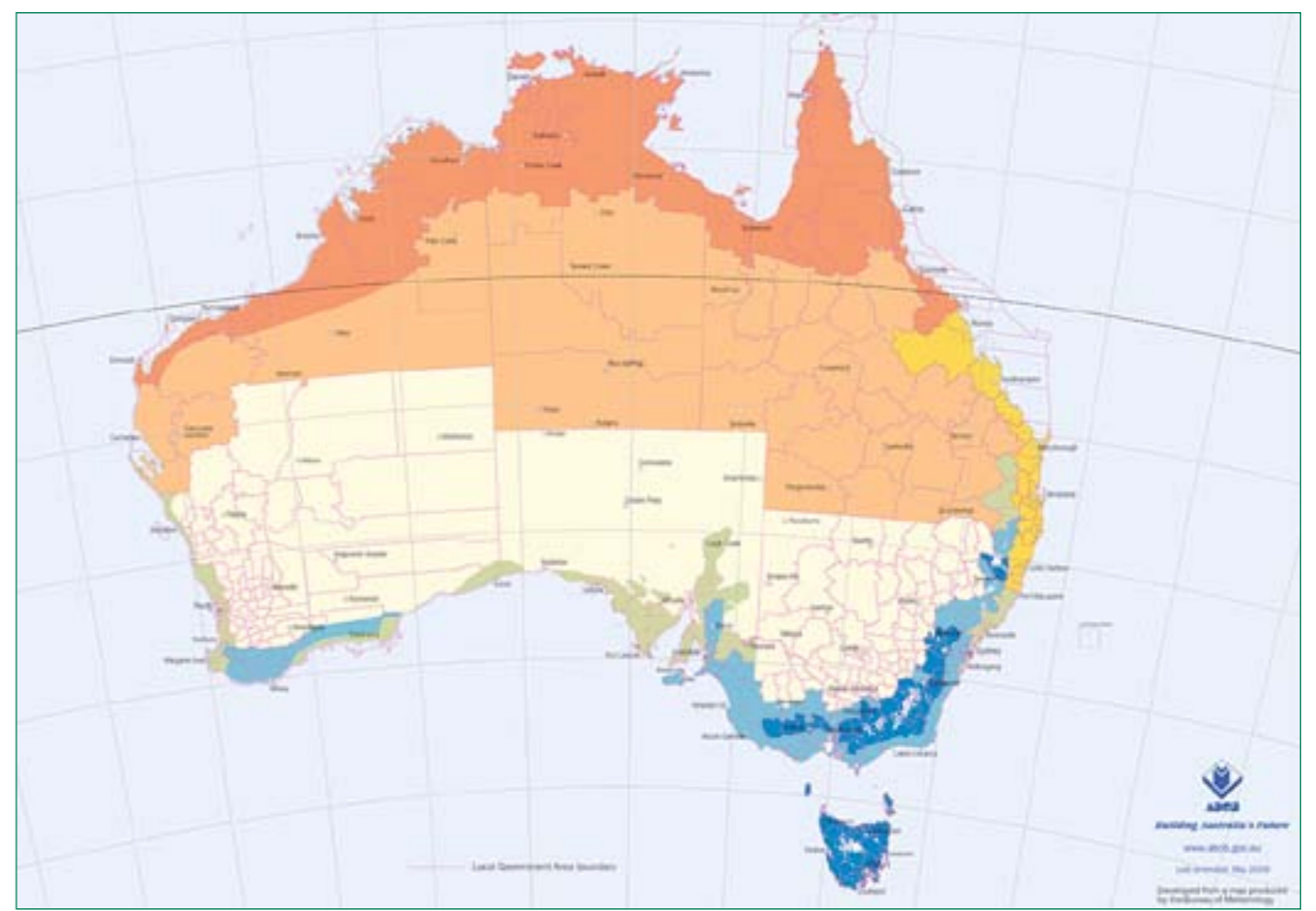
- Class 6:** Retail including malls, individual shops and restaurants.
- Class 7:** Car parks and warehouses.
- Class 8:** Laboratories and factories – buildings used for production of goods.
- Class 9a, b:** Health care and public assembly buildings – schools, hospitals, sports complexes, theatres, public halls.
- Class 9c:** Aged care buildings, e.g. accommodation section of aged care nursing homes.
- Class 10:** Private garages, sheds.

## Thermal Product Selector

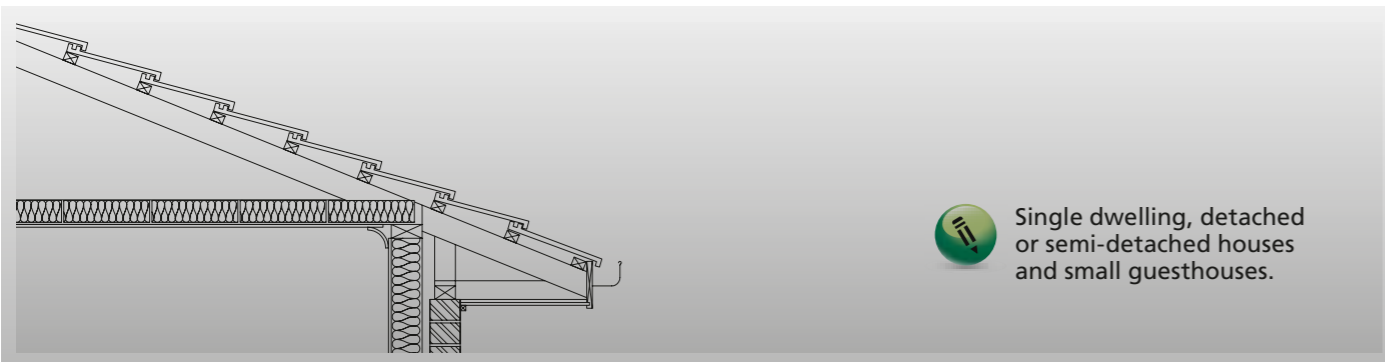
Building Element	Polymax Thermal Batts	Polymax Building Blanket	Polymax Acoustic Thermal Batts	Polymax Prime	Polymax Absorb	Polymax Thermaflex	Polymax HVAC
Ceilings	✓✓	✗	✓✓	✓	✓	✗	✗
Walls	✓✓	✓	✓✓	✓	✓	✗	✗
Floors	✓✓	✓	✓✓	✓	✓	✗	✗
Metal Roofing and Cladding	✗	✓✓	✗	✗	✗	✗	✗
Concrete Slab Roofs	✗	✓✓	✗	✗	✗	✗	✗
Flexible Ductwork	✗	✗	✗	✗	✗	✓✓	✗
Rigid Ductwork	✗	✗	✗	✗	✗	✗	✓✓

✓✓ Recommended    ✓ Suitable for limited applications    ✗ Not recommended

## Australian Climate Zones



## Polymax Thermal Batts for Roof and Ceiling Applications in Class 1 Buildings



	Climate Zones			
	1 & 2*	3	4,5,6,7	8
<b>Direction of heat flow</b> (summer or winter conditions)	<b>1 &amp; 2 Down</b> *2: Down and Up above 300 metres altitude	<b>Down and Up</b>	<b>Up</b>	<b>Up</b>
<b>Minimum Total R value</b> Light coloured roofing material (cream, white, light grey)	<b>R4.1</b>	<b>R4.1</b>	<b>R4.1</b>	<b>R6.3</b>
Recommended Polymax product	Polymax R4.0 Thermal Batts	Polymax R4.0 Thermal Batts	Polymax R4.0 Thermal Batts	Polymax R6.0 (2 x 3.0) Thermal Batts
<b>Minimum Total R value</b> Medium coloured roofing material (dull galvanised or yellow)	<b>R4.6</b>	<b>R4.6</b>	<b>R4.6</b>	<b>R6.3</b>
Recommended Polymax product	Polymax R4.5 (R3.0 + R1.5) Thermal Batts	Polymax R4.5 (R3.0 + R1.5) Thermal Batts	R4.5 (R3.0 + R1.5) Thermal Batts	Polymax R6.0 (2 x 3.0) Thermal Batts
<b>Minimum Total R value</b> Dark coloured roofing material (slate, red terracotta, green))	<b>R5.1</b>	<b>R5.1</b>	<b>R5.1</b>	<b>R6.3</b>
Recommended Polymax product	Polymax R5.0 (2 x R2.5) Thermal Batts	Polymax R5.0 (2 x R2.5) Thermal Batts	Polymax R5.0 (2 x R2.5) Thermal Batts	Polymax R6.0 (2 x R3.0) Thermal Batts

### Important! – compensate for uninsulated ceiling areas

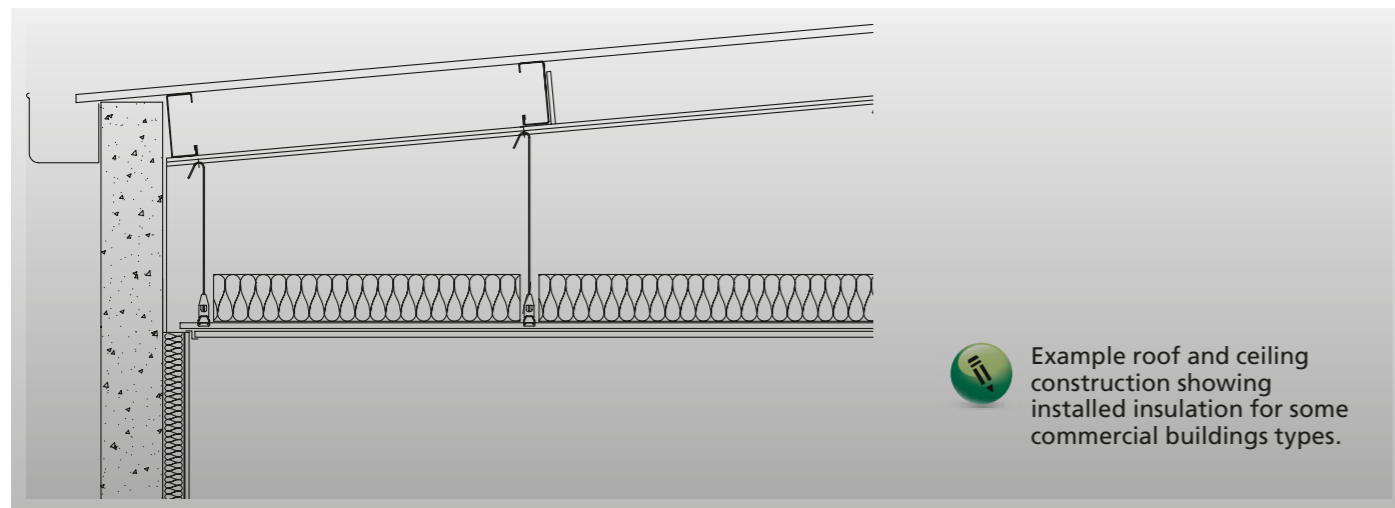
Sections of the ceiling may not be able to be insulated due to the presence of recessed down lights, heating flues, exhaust fans etc. This loss of insulation must be compensated by increasing the R value of the insulation installed. The table below highlights the R value adjustment required to compensate for the uninsulated ceiling area. Applicable for all building classes.

Percentage of uninsulated ceiling	Minimum Total R value of ceiling insulation Adjusted minimum of ceiling insulation to compensate for loss of ceiling area insulation							
	R2.5	R3.0	R3.5	R4.0	R4.5	R5.0	R5.5	R6.0
0.5% to less than 1.0%	R2.8	R3.4	R4.0	R4.7	R5.4	R6.2	R6.9	
1.0% to less than 1.5%	R2.9	R3.6	R4.4	R5.2	R6.1	R7.0		
1.5% to less than 2.0%	R3.1	R3.9	R4.8	R5.8	R6.8			
2.0% to less than 2.5%	R3.3	R4.2	R5.3	R6.5				
2.5% to less than 3.0%	R3.6	R4.6	R5.9					
3.0% to less than 4.0%	R4.2	R5.7						
4.0% to less than 5.0%	R5.0							
5.0% or more	Not permitted							





## Selector Table: Roof & Ceiling Class 2 - 10 Buildings



Commercial and multi-residential apartments and community buildings.

	Climate Zones			
	1, 2, 3	4, 5, 6	7	8
<b>Direction of heat flow (Summer or Winter conditions)</b>	<b>Downwards (summer conditions)</b>		<b>Upwards (winter conditions)</b>	
Minimum Total R value for a roof or ceiling, light coloured roofing material (cream, white or light grey)	<b>R3.2</b>	<b>R3.2</b>	<b>R3.7</b>	<b>R4.8</b>
Recommended Polymax product	R3.0	R3.0	R3.5	R4.5
Minimum Total R value for a roof or ceiling, medium coloured roofing material (dull galvanised, yellow)	<b>R3.7</b>	<b>R3.2</b>	<b>R3.7</b>	<b>R4.8</b>
Recommended Polymax product	R3.5	R3.0	R3.5	R4.5
Minimum Total R value for a roof or ceiling, dark coloured roofing material (grey, slate, red or green)	<b>R4.2</b>	<b>R3.2</b>	<b>R3.7</b>	<b>R4.8</b>
Recommended Polymax product	R4.0	R3.0	R3.5	R4.5

## Selector Table: External Walls Class 1 Buildings

Climate Zones	Building class	Minimum Total R Value for the wall	Recommended Material R Value of Polymax wall insulation product
1, 2, 3, 4 & 5	1	<b>R2.8</b>	R2.5
6 & 7	1	<b>R2.8</b>	R2.5
8	1	<b>R3.8</b>	R3.5

Detached and semi-detached houses.

## Selector Table: External Walls Class 2 - 10 Buildings

Climate Zones	Building class	Minimum Total R Value for the wall	Recommended Material R Value of Polymax wall insulation product
1, 2 & 3	2 to 10	<b>R3.3</b>	R3.0
4, 5, 6 & 7	2 to 10	<b>R2.8</b>	R2.5
8	2 to 10	<b>R3.8</b>	R3.5

Commercial and multi-residential apartments and community buildings.

## Under Floor Insulation

Underfloor insulation is required for buildings built on piers with sub floor void areas.

Insulation is also required for on-ground concrete slabs where the slab edges are exposed if they incorporate in-slab heating or cooling systems.

Floor insulation regulations under The National Construction Code has complex minimum requirements depending on the type of floor i.e. concrete slab, the climate zone, the presence of in-floor heating and cooling systems, etc. Due to this complexity we recommend that a default material R value of R 2.0\* be used for all subfloor applications and for on-ground concrete slab edges that incorporate in-slab heating and cooling systems.

\*Except for buildings in climate zone 8 where our default minimum recommendation is R3.5



## Polymax Heating and Cooling Ductwork


Building Classes 2-10 – Commercial, multi-residential and community buildings.

Location of Ductwork and Fittings	Minimum material R Value for the insulation of ductwork and fittings in each climate zone		
	Zones 1, 2, 3, 5	Zones 4, 6, 7	Zone 8
<b>Within an air conditioned space</b>	R1.2	R1.0	R1.6
<b>Where exposed to direct sunlight</b>	R3.0	R3.0	R3.4
<b>All other locations</b>	R2.0	R2.0	R2.4

Building Class 1 – Single and semi-detached houses.

Ductwork Element	Minimum material R Value for the insulation of ductwork and fittings in each climate zone				
	Heating-only system or cooling-only system including an evaporative cooling system		Combined heating and refrigerated cooling system		
	Zones 1, 2, 3, 4, 5, 6, 7	Zone 8	Zones 1, 3, 4, 6, 7	Zones 2, 5	Zone 8
<b>Ductwork</b>	R1.0	R1.5	R1.5	R1.0	R1.5
<b>Fittings</b>	R0.4	R0.4	R0.4	R0.4	R0.4

The information in this brochure is believed to be true at the time of publication. Martini Industries Pty Ltd reserves the right to change specifications without notice, and have no obligation or liability for persons misrepresenting or misusing this information in any manner whatsoever.



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