

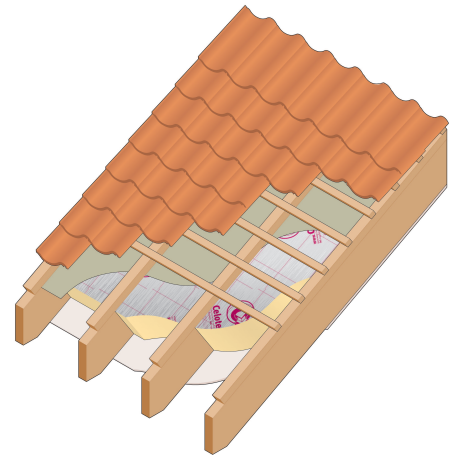
## Between rafter applications

### Introduction

Celotex is the brand leading manufacturer of PIR insulation boards, with its range encompassing the thinnest and thickest boards available to the construction industry today. All of the Company's products are manufactured at its plant in Suffolk, from where its dedicated Technical Support team offers advice and calculations for compliance with current regulations and legislation. Celotex: We know insulation inside and out.

Use **Celotex GA3000** and **Celotex XR3000** high performance thermal insulation in between rafter applications to minimise insulation thickness and give the following benefits:

- Optional single-layer insulation reduces cutting
- Provides reliable long term energy savings for buildings
- Easy to dry line with plasterboard once installed
- Dimensionally stable
- No loss of internal headroom
- Ideal for loft conversions/room in roof applications



### Celotex GA3000 Technical Data

Product Code	Thickness (mm)	R-value (m <sup>2</sup> K/W)	Nominal Weight (kg/m <sup>2</sup> )
GA3050	50	2.15	1.59
GA3055	55	2.35	1.73
GA3060	60	2.60	1.93
GA3065	65	2.80	2.07
GA3070	70	3.00	2.22
GA3075	75	3.25	2.36
GA3080	80	3.45	2.50
GA3090	90	3.90	2.79
GA3100	100	4.30	3.29

### Celotex XR3000 Technical Data

Product Code	Thickness (mm)	R-value (m <sup>2</sup> K/W)	Nominal Weight (kg/m <sup>2</sup> )
XR3110	110	4.75	3.60
XR3120	120	5.20	3.90
XR3130	130	5.65	4.21
XR3140	140	6.05	4.51
XR3150	150	6.50	4.82
XR3165	165	7.15	5.52
XR3200	200	8.65	6.64

### Celotex and Sustainability

Celotex' environmental profile has been independently assessed by the BRE.

The results of this assessment show that Celotex has the lowest environmental impact of any PIR manufacturer.

For a copy of the certificate and for further information on Celotex' position including their new sustainability statement, please visit the sustainability pages of the website at [celotex.co.uk](http://celotex.co.uk)



### Example U-value calculation: ventilated between rafters

Construction	Thickness (mm)	
Outside surface resistance	-	
Tiling including batten space	-	
Sarking felt	-	
Ventilated cavity	50.0	
<b>Variable layer</b> (for below rafters)	See below	
Polythene 1000 gauge, VCL	-	
Plasterboard	12.5	
Inside surface resistance	-	
<b>Variable layer</b>	Thickness (mm)	U-value (W/m <sup>2</sup> K)
Celotex XR3000 @ 400 ctrs	130	0.25
Celotex XR3000 @ 400 ctrs	140	0.24
Celotex XR3000 @ 400 ctrs	150	0.22
Celotex XR3000 @ 400 ctrs	165	0.20
Celotex XR3000 @ 600 ctrs	120	0.24
Celotex XR3000 @ 600 ctrs	130	0.23
Celotex XR3000 @ 600 ctrs	140	0.21
Celotex XR3000 @ 600 ctrs	150	0.20
Celotex XR3000 @ 600 ctrs	165	0.18

**U-value**  
For U-values see **variable layer list**, or for more options, refer to our online U-value calculator at [celotex.co.uk](http://celotex.co.uk)

### Example U-value calculation: unventilated between rafters

Construction	200mm deep rafters		175mm deep rafters		150mm deep rafters	
	Thickness (mm)		Thickness (mm)		Thickness (mm)	
Outside surface resistance	-		-		-	
Tiling including batten space	-		-		-	
Breather membrane	-		-		-	
Low E cavity, remainder of rafter depth	Various		Various		Various	
<b>Variable layer</b> (for between rafters)	See below		See below		See below	
Polythene 1000 gauge, VCL	-		-		-	
Plasterboard	12.5		12.5		12.5	
Inside surface resistance	-		-		-	
<b>Variable layer</b>	Thickness (mm)	U-value (W/m <sup>2</sup> K)	Thickness (mm)	U-value (W/m <sup>2</sup> K)	Thickness (mm)	U-value (W/m <sup>2</sup> K)
Celotex XR3000 @ 400 ctrs	130	0.21	130	0.21	130	0.21
Celotex XR3000 @ 400 ctrs	140	0.20	140	0.21	140	0.21
Celotex XR3000 @ 400 ctrs	150	0.20	150	0.20	150	0.20
Celotex XR3000 @ 400 ctrs	165	0.18	165	0.19	165	0.19
Celotex XR3000 @ 600 ctrs	130	0.20	130	0.20	110	0.22
Celotex XR3000 @ 600 ctrs	140	0.19	140	0.19	120	0.22
Celotex XR3000 @ 600 ctrs	150	0.18	150	0.18	130	0.21
Celotex XR3000 @ 600 ctrs	165	0.17	165	0.17	140	0.20

**U-value**  
For U-values see **variable layer list**, or for more options, refer to our online U-value calculator at [celotex.co.uk](http://celotex.co.uk)

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## Installation Guidelines

### Installation guidelines: ventilated

- Make sure there is enough rafter depth to accommodate not only the thickness of the Celotex insulation but also a 50mm ventilated airspace above the boards.
- Fix battens to the inside face of the rafter so that the bottom of the batten is 50mm below the sarking felt.

### Installation guidelines: unventilated

- Install the breather membrane over the rafters by either fixing battens to the sides of the rafters and allowing the membrane to sag between the rafters, or by fixing counter battens over the membrane, leaving the entire rafter depth to be filled with insulation. All details are to be in accordance with the membrane manufacturer's recommendations.

### Installation guidelines: ventilated and unventilated

- Measure the space to be filled between the inside face of the rafter prior to cutting the board.
- Cut the Celotex insulation, using the Celotex Insulation Saw, at a slight angle, making the board width slightly oversized on one surface to achieve a 'friction fit'.
- Push the boards into the void between the rafters until they are tight up to the battens or the membrane, ensuring that lateral joints are closely butted.
- Cut and fit the second layer, if required, as above and push tightly up to the underside of the first layer
- Tightly fit the insulation to the ridge plate and carry over and tightly butt the wall plate at eaves.
- A vapour control layer (VCL) should be installed to the underside of the rafters. A polythene sheet of higher vapour resistance is recommended for high humidity areas such as kitchens or bathrooms.
- Complete the internal finish with plasterboard or other suitable sheet material.

## Certifications and accreditations

Celotex products GA3000 and XR3000 are covered by BBA Agreement Certificate No 95/3197. To download a copy of this certificate, visit the 'literature' pages of the website at [celotex.co.uk](http://celotex.co.uk)

## Further information

If you wish to contact Celotex, please visit [celotex.co.uk](http://celotex.co.uk) and click on the 'contact us' page.

For information regarding storage and handling of Celotex products, or for Health and Safety advice, please refer to the 'literature' pages of the website at [celotex.co.uk](http://celotex.co.uk)

Celotex has a policy of continuous product development and reserves the right to alter product designs or specifications without prior notice.

\*Calls to our Technical Advisory Service are charged at 30p per minute from a BT landline and lines are open Monday - Friday from 8.00am - 5.15pm. Details and pricing are correct at date of publication - March 2008.

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