



## Between Rafter Applications

Pitched Roof Insulation

**Celotex**  
Insulation Specialists

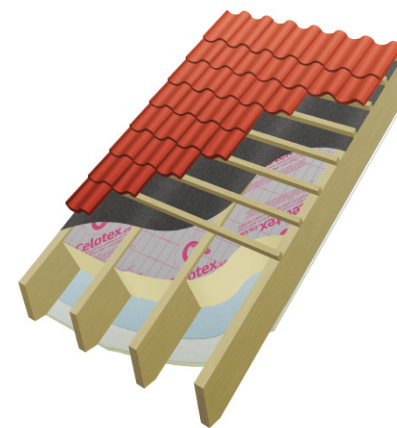
### Introduction

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 the dedicated Celotex Technical Centre offers advice and calculations for compliance with current regulations and legislation.

Celotex: We know insulation inside and out.

Use **Celotex XR4000** 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 XR4000 between rafters

### Celotex XR4000 Technical Data

Product Code	Thickness (mm)	R-value (m <sup>2</sup> K/W)	Weight (kg/m <sup>2</sup> )
XR4110	110	5.00	3.58
XR4120	120	5.45	3.87
XR4130	130	5.90	4.19
XR4140	140	6.35	4.49
XR4150	150	6.80	4.79
XR4165	165	7.50	5.43
XR4200	200	9.05	6.53



For premium performance including Class O fire performance Celotex FR5000 is suitable for this application.

### Sustainable Insulation

Celotex PIR insulation has been independently assessed by BRE Global and has been accredited with an A+ rating when compared to the BRE Green Guide.

The results also show that Celotex offers a lower environmental impact than other typical PIR manufacturers.

For further information about Celotex' sustainable insulation solutions, visit the sustainability pages of the website at [celotex.co.uk](http://celotex.co.uk)



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### Example U-value Calculation: Unventilated Between Rafters

Construction		200 deep rafters Thickness (mm)	175 deep rafters Thickness (mm)	150 deep rafters Thickness (mm)
Outside surface resistance		-	-	-
Tiling including batten space			-	-
Breather membrane		-	-	-
Low emissivity cavity, remainder of rafter depth		Various	Various	Various
<b>Variable layer</b> (for between rafters)			See below	See below
Polythene 1000 gauge, VCL		-	-	-
Plasterboard		12.5	12.5	12.5
Inside surface resistance		-	-	-
Celotex Product - Variable layer	Thickness (mm)	U-value (W/m <sup>2</sup> K)	U-value (W/m <sup>2</sup> K)	U-value (W/m <sup>2</sup> K)
Celotex XR4000 @ 400 ctrs	140	0.20	0.20	-
Celotex XR4000 @ 400 ctrs	150	0.19	0.19	-
Celotex XR4000 @ 400 ctrs	165	0.17	0.18*	-
Celotex XR4000 @ 400 ctrs	200	0.16*	-	-
Celotex XR4000 @ 600 ctrs	130	0.19	0.19	0.19
Celotex XR4000 @ 600 ctrs	140	0.18	0.18	0.19*
Celotex XR4000 @ 600 ctrs	150	0.17	0.17	0.18*
Celotex XR4000 @ 600 ctrs	165	0.16	0.16*	-
Celotex XR4000 @ 600 ctrs	200	0.15*	-	-

\*Counter batten over membrane - see guidelines below

#### 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

Celotex insulation boards should not be installed when the temperature is at or below 4°C and falling.

- Make sure there is enough rafter depth to accommodate not only the thickness of the Celotex insulation, but also a minimum 20mm drapage space for the breathable membrane.
- Fix battens to the inside face of the rafters, to ensure that the drapage space is maintained.
- Alternatively, counter battens can be fixed over the breathable membrane to provide a channel for moisture run off. The whole depth of the rafter can then be filled with insulation.
- All details are to be in accordance with the membrane manufacturer's details.
- Measure the space to be filled between the inside face of the rafter prior to cutting the board.
- Use the **Celotex Insulation Saw** to cut the boards 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.
- 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 TB4000, GA4000, FR5000 and XR4000 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](#)

### Further Information

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

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

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