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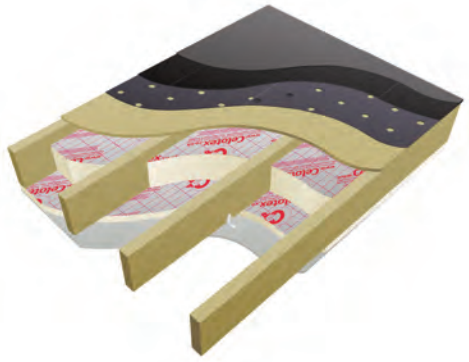
Between and under joist applications

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 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 TB4000, Celotex GA4000** or **Celotex XR4000** high performance thermal insulation in flat roof between and under joist applications to minimise insulation thickness and give the following benefits:

- A perfect solution to upgrade older buildings
- Provides reliable long term energy savings for buildings
- No need to remove existing weatherproofing covering
- Ventilated cold roof construction
- The ideal renovation/conversion solution
- Easy to minimise any loss of internal headroom



Celotex XR4000 & TB4000

Celotex TB4000 Technical Data

Product Code	Thickness (mm)	R-value (m^2K/W)	Weight (kg/m^2)
TB4012	12	0.50	0.50
TB4020	20	0.90	0.72
TB4025	25	1.10	0.85
TB4030	30	1.35	0.98
TB4035	35	1.55	1.11
TB4040	40	1.80	1.26
TB4045	45	2.00	1.40

Celotex GA4000 Technical Data

Product Code	Thickness (mm)	R-value (m^2K/W)	Weight (kg/m^2)
GA4050	50	2.25	1.55
GA4055	55	2.50	1.68
GA4060	60	2.70	1.90
GA4065	65	2.95	2.05
GA4070	70	3.15	2.19
GA4075	75	3.40	2.34
GA4080	80	3.60	2.48
GA4085	85	3.85	2.62
GA4090	90	4.05	2.76
GA4095	95	4.30	2.90
GA4100	100	4.50	3.27

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 2008.

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

celotex
zero carbon

Celotex XR4000 Technical Data

Product Code	Thickness (mm)	R-value (m^2K/W)	Weight (kg/m^2)
XR4110	110	5.00	3.58
XR4120	120	5.45	3.88
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 FR4000 is suitable for this application.

Example U-value Calculation: cold flat roof - between and under joists

Construction		**125mm deep joists Thickness (mm)**	**150mm deep joists Thickness (mm)**	**175mm deep joists Thickness (mm)**
Outside surface resistance		-	-	-
Weather-proofing system		n/a	n/a	n/a
Plywood		19	19	19
Ventilated cavity		50	50	50
Celotex between joists @ 400 ctrs - 11.7% brg		GA4075	GA4100	XR4120
Variable layer [for below joist]		See below	See below	See below
Low E Cavity batten air space - 11.7% brg See Note 1		**25**	**25**	**25**
Vapour control layer		-	-	-
Plasterboard		12.5	12.5	12.5
Inside surface resistance		-	-	-
Variable layer Celotex Product	**Thickness (mm)**	**U-value (W/m^2K)**	**U-value (W/m^2K)**	**U-value (W/m^2K)**
Celotex TB4000	20	-	-	0.20
Celotex TB4000	25	-	-	0.19
Celotex TB4000	30	-	0.20	0.18
Celotex TB4000	35	-	0.19	0.17
Celotex TB4000	40	-	0.19	0.17
Celotex TB4000	45	-	0.18	0.16
Celotex GA4000	50	**0.18***	**0.16***	**0.14***
Celotex GA4000	55	**0.17***	**0.15***	**0.14***
Celotex GA4000	60	**0.16***	**0.14***	**0.13***
Celotex GA4000	65	**0.16***	**0.14***	**0.13***
Celotex GA4000	70	**0.15***	**0.14***	**0.12***
Celotex GA4000	75	**0.15***	**0.13***	**0.12***
Celotex GA4000	80	**0.14***	**0.13***	**0.12***
Celotex GA4000	85	**0.14***	**0.12**	**0.11**
Celotex GA4000	90	**0.13***	**0.12***	**0.11***
Celotex GA4000	95	**0.13***	**0.12***	**0.11***
Celotex GA4000	100	**0.13***	**0.11***	**0.11***

Note 1 - Use 25mm x 47mm batten to create a low emissivity air space

* This thickness of board is recommended to be fixed using 25mm x 47mm battern to allow a suitable construction detail.

Installation Guidelines

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

- Make sure that there is enough joist 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 joists so that the bottom of the batten is 50mm below the decking.
- Measure the space to be filled between the inside face of the joists prior to cutting the board, then cut the board using the Celotex Insulation Saw.
- The Celotex insulation clip is designed to allow insulation boards to be installed between timber joists quickly and without nails or screws.
- Fit the clips at one metre maximum centres along the edge of the insulation (for further information about the Celotex insulation clip and its use, visit the 'literature' pages of the website at celotex.co.uk and download the product datasheet).
- Push the boards into the void between the joists until they are tight up to the underside of the stop battens, ensuring the lateral joints are tightly butted.
- Secure the second layer of Celotex insulation to the underside of the joists with broad-headed clout nails.
- Joints between boards must be tightly butted and sealed with Celotex Insulation Tape to create a vapour seal.
- Clearly mark rafter-lines on the board face, using a spirit based felt-tip marker.
- Nail or screw plasterboard or other lining through the insulation to the joist.

Composite systems can be used to combine Celotex insulation under joist lining with a quilt type insulant between the joists which will provide acoustic, as well as thermal insulation. This option is particularly useful when upgrading to modern acoustic insulation standards.

When updating an existing ceiling, the Celotex insulation can be fitted directly underneath the ceiling, providing there is no vapour check layer present such as gloss paint or foil backed plasterboard.

Always ensure that there is a 50mm minimum ventilation gap above any original insulation. Ventilation must be provided above an insulated ceiling directly through the cold void. Failure to do so could result in serious condensation problems that may lead to decay and possible failure.

Certification and Accreditations

Celotex products TB4000, GA4000 and XR4000 are covered by BBA Agrement 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.

*Calls to the Celotex Technical Centre are charged at 30p per minute from a BT landline and lines are open Monday - Friday from 8.00am - 5.15pm.
Details are correct at date of publication - January 2011.

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