Ventilated Lead Covering Applications

Flat Roof Insulation

Celotex
SAINT-GOBAIN

IMPORTANT: On 1 September 2017, Celotex took the precautionary measure to temporarily suspend the supply of Celotex FR5000, Celotex CG5000, Celotex CF5000 and Celotex SL5000 while we investigate the results of recent tests (Parts 6 and 7 of British Standard 476). In addition, we have recently identified a compliance issue relating to our calculation and testing of the declared lambda value of products in the 4000 and 5000 ranges and the Crown-Bond and Crown-Fix products within the Crown Flat Roofing range. Due to this issue, the suspension of the 5000 range will continue and now includes the FI5000 and GD5000 products. Materials relating to the 5000 range products are for information only. Please note that all products in the TB4000, GA4000 below 100mm, PL4000 and CW4000 ranges manufactured after 15 December 2017 will be marketed from January as Celotex 3000 with a declared lambda value of 0.023 W/mK. To read the full statement please visit the Celotex website homepage.

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 GA4000, Celotex XR4000 or Celotex TD4000 in ventilated, lead covered, warm roof applications to minimise insulation thickness and give the following benefits:

- Celotex TD4000 provides deck, vapour control layer and insulation as a three-in-one product

- Celotex XR4000 provides the thickest insulation available in the market allowing even lower U-values to be achieved

- Provides reliable long term energy savings for buildings

- Ideal for use in occasionally trafficked applications

- Warm roof construction due to over joist installation

- Rapidly installed and weatherproofed
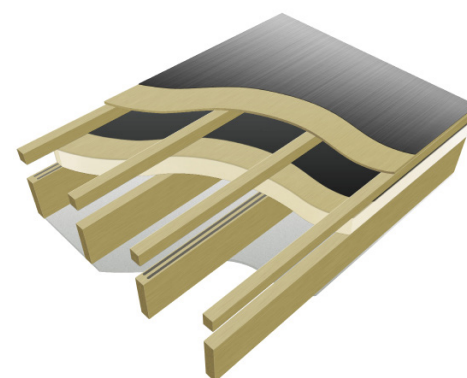
Ventilated lead covered flat roof using Celotex TD4000

Celotex GA4000 Technical Data

Product Code	Thickness (mm)	R-value (m²K/W)	Weight (kg/m²)
GA4050	50	2.25	1.55
GA4060	60	2.70	1.90
GA4070	70	3.15	2.19
GA4075	75	3.40	2.34
GA4080	80	3.60	2.48
GA4090	90	4.05	2.76
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.

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 XR4000 Technical Data

Product Code	Thickness (mm)	R-value (m²K/W)	Weight (kg/m²)
XR4120	120	5.45	3.88
XR4130	130	5.90	4.19
XR4140	140	6.35	4.49
XR4150	150	6.80	4.79
XR4200	200	9.05	6.53

Celotex TD4000 Technical Data

Product Code	Thickness (mm)	R-value (m²K/W)	Weight (kg/m²)
TD4096	90 + 5.5	4.10	6.46
TD4126	120 + 5.5	5.45	7.58

FR5000

For premium performance including Class O fire performance Celotex FR5000 is suitable for this application. **(Product suspended, 1 September 2017)**

Example U-value Calculation: Warm Flat Roof - Ventilated Lead Cover

Construction	Celotex TD4000 Thickness (mm)			Insulated Deck Thickness (mm)		
Outside surface resistance	-			-		
Code 5 lead	2.2			2.2		
Plywood	12			12		
Ventilated cavity between battens/firrings	50			50		
Variable layer	See below			See below		
Polythene 1000 gauge, VCL	n/a			Yes		
Plywood	n/a			19		
Cavity between joist @ 400 ctrs - 11.7% bridging	150			150		
Plasterboard	12.5			12.5		
Inside surface resistance	-			-		
Variable layer	Celotex Product	Thickness (mm)	U-value (W/m^{2}K)	Celotex Product	Thickness (mm)	U-value (W/m^{2}K)
	TD4000	96	0.23	GA4000	90	0.25
	TD4000	126	0.18	GA4000	100	0.22
				XR4000	110	0.21
				XR4000	120	0.19
				XR4000	130	0.18
				XR4000	140	0.17
				XR4000	150	0.16
				XR4000	165	0.14
				XR4000	200	0.12

Installation Guidelines (using Celotex TD4000)

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

- Ensure that joist spacing is at no more than 600mm centres and that the dimension of the joist is sufficient to span and accept additional loads. If asphalt weathering is to be used, joists should be at no more than 400mm centres.
- Install the insulation boards, ensuring that the long edges are parallel to the line of the joists. 50mm x 50mm cross noggins should be inserted between joists to support the short edges of the boards.
- Where boards butt together, bed into twin beads of vapour sealant wide enough to accommodate this arrangement. This completes the vapour control layer (VCL) when combined with each board's foil facings.
- Lay the boards with the plywood side uppermost and stagger board joints. Leave a gap of approximately 2mm between boards and ensure a minimum 20mm bearing on joists and noggins.
- Fix Celotex TD4000 with corrosion-proof Suretwist Composite Panel helical fasteners at a frequency to suit the design wind load. Refer to BS 6399-2 Code of Practice for Wind Loads. As a guide, 16 fasteners per board will resist a wind load of 2.22 KN/m2 based on a design load of 0.4KN per fastener.

Installation Guidelines (cont)

- Ensure that fixings are no less than 10mm in from the board edge or 50mm from each corner. They should be equally spaced along the supporting joists. Fixings should be long enough to penetrate at least 38mm into the supporting timber.
- Stagger opposing fixings where two board edges share the same joist or noggin.
- Provide a complete insulation envelope by extending the wall insulation board up to the underside of the roof deck.
- Provide a soffit or ceiling below the joists, as the surface of the product is not designed to be used as a decorative internal finish.
- Ventilation should be provided to reduce the risk of condensation. Lay 50mm x 50mm counter battens to the top of the Celotex TD4000, allow 25mm continuous gap at opposite sides of the roof to allow free flow ventilation beneath the lead deck. Ventilation is in accordance with the Lead Sheet Association's recommendations.
- Lay 18mm plywood on the top of the counter battens and screw fix into place.
- Lay underlay on the plywood using building paper to BS1521 Class A.
- Install lead sheet in accordance with the Lead Sheet Association's recommendations.

Deck stability (TD4000 application only)

Celotex TD4000 incorporates exterior grade WBP plywood to BS 1203, laminated to the surface. This gives the product excellent strength. Boards can span up to 600mm joist centres to provide a suitable substrate for a variety of weathering systems.

Installation Guidelines (using Celotex GA4000 or XR4000)

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

- Ensure that joist spacing is at no more than 600mm centres and that the dimension of the joists is sufficient to span and accept additional loads. Install firrings to give a fall of 1:80 or as appropriate to the type of construction tolerance.
- Install 19mm plywood to the top of the joists/firrings and lay 1000g polythene vapour control layer (VCL) over the ply. Install Celotex insulation to the required thickness.
- Install a breathable membrane on top of the insulation.
- Ventilation should be provided to reduce the risk of condensation. Lay 50mm x 50mm counter battens to the top of the Celotex insulation, allow 25mm continuous gap at opposite sides of the roof to allow free flow ventilation beneath the lead deck. Ventilation is in accordance with the Lead Sheet Association's recommendations.
- Fix with corrosion-proof Suretwist Composite Panel helical fasteners at a frequency to suit the design wind load. Refer to BS6399-2 Code of Practice for Wind Loads. As a guide, 16 fasteners per board will resist a wind load of 2.22 KN/m2 based on a design load of 0.4KN per fastener.
- Lay 18mm plywood on the top of the counter battens and screw fix into place.
- Lay underlay on the plywood using building paper to BS1521 Class A.
- Install lead sheet in accordance with the Lead Sheet Association's recommendations.

Certi ication and Accreditations

Celotex products GA4000 and XR4000 are covered by BBA Agrement Certificate No 17/5405. 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.

Celotex
Lady Lane Industrial Estate,
Hadleigh, Ipswich
Suffolk IP7 6BA

T: 01473 820850
W: celotex.co.uk