



Flat Roof Insulating Deck Applications

Flat Roof Insulation

Celotex
Insulation Specialists

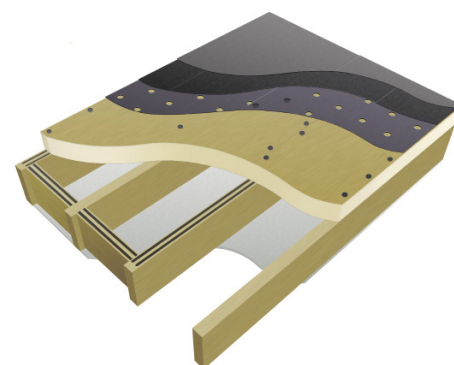
Introduction

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 TD4000** to combine high performance thermal insulation with 5.5mm WBP ply for use in flat roof deck applications to minimise insulation thickness and give the following benefits:

- Three-in-one product to provide deck, vapour control layer (VCL) and insulation
- 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
- Accepts a wide variety of weathering systems



Celotex TD4000

Celotex TD4000 Technical Data

Product Code	Thickness (mm)	R-value (m ² K/W)	Weight (kg/m ²)
TD4096	90 + 5.5	4.10	6.46
TD4106	100 + 5.5	4.55	6.97
TD4116	110 + 5.5	5.00	7.28
TD4126	120 + 5.5	5.45	7.58

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



cont...



Example U-value Calculation: Warm Flat Roof - Insulating Deck

Construction		Celotex TD4000 Thickness (mm)	Insulated Deck Thickness (mm)
Outside surface resistance		-	-
Built-up roofing or single-ply membrane		12	1.5 (see note)
Plywood		n/a	12
Variable layer		See below	See below
Cavity between joist @ 400 ctrs - 11.7%		150	150
Plasterboard		12.5	12.5
Inside surface resistance		-	-
Variable layer		U-value (W/m ² K)	U-value (W/m ² K)
Celotex Product	Thickness		
TD4000	96	0.22	0.22
TD4000	106	0.21	0.21
TD4000	116	0.19	0.19
TD4000	126	0.18	0.18

Note: Prior to weatherproofing the roof, check with the single-ply membrane manufacturer that the proposed weathering system is suitable for use with this type of construction.

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 noggings should be inserted between joists to support the short edges of the boards.
- Where boards butt together, bed onto 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 noggings.
- 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. A minimum of 16 fasteners per board will resist a wind load of 2.22 KN/m² based on a design load of 0.4KN per fastener.
- 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.
- Ensure that the plywood is completely dry before any weathering system is applied.
- Always use a Type 3G felt to BS 747 as a vapour diffusion first layer when using BUR weathering systems. When using a single-ply membrane, additional 12mm plywood has to be applied on top of the Celotex TD4000.
- Temporary protection must be provided for both the insulation and the waterproofing, if significant foot traffic is anticipated either during or after installation.

cont...



Flat Roof Insulating Deck Applications

Flat Roof Insulation

Celotex
Insulation Specialists

Falls

The structure should be designed so that the finished roof has a continuous, smooth and even slope towards the rainwater outlet or gutter. The minimum fall should be 1:80 to avoid ponding water.

Deck stability

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.

Vapour control layer

Celotex TD4000 has a built-in VCL due to the board's foil facer, but this is discontinuous at the board joints. Therefore, a twin bead of vapour sealant should be applied to the top of the supporting joists and noggins at all board joints. This completes the VCL when combined with each board's foil facers.

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.