



Single-ply Membrane Using Celotex EL3000

Flat Roof Insulation

Celotex
 Insulation Specialists

Introduction

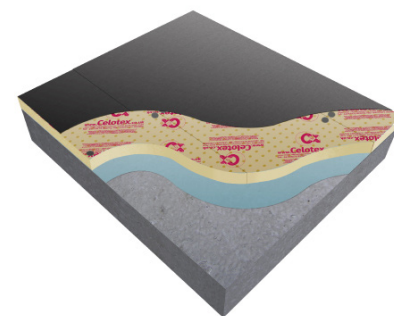
Celotex is the brand leading manufacturer of PIR insulation boards, with its range encompassing the thinnest and thickest boards available to the construction industry today. All of the Company's products are manufactured at its plant in Suffolk, from where the dedicated Celotex Technical Centre offers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

Celotex: We know insulation inside and out.

Use **Celotex EL3000** high performance insulation in either mechanically fixed or fully adhered single-ply flat roofing applications. The unperforated facer is suitable for single-ply fully adhered roof systems and self adhesive membranes.

When designing a flat roof using Celotex EL3000 boards, three basic principles apply:

1. Design to a fall of 1:80, 1:60 or 1:40 as appropriate to the weathering system, type of deck and construction tolerances.
2. Have due regard for the use and design of the building and the need to ensure that the design will not allow for a build up of moisture below the waterproofing membrane.
3. Provide adequate protection for both insulation and waterproofing if significant foot traffic is expected either during or after the completion of the roof.



Celotex EL3000
 with single-ply membrane
 over concrete deck

Celotex EL3000 Technical Data

Product Code	Thickness (mm)	R-value (m ² K/W)	Weight (kg/m ²)
EL3050	50	1.85	2.04
EL3080	80	3.05	3.00
EL3090	90	3.45	3.32
EL3100	100	3.80	3.64
EL3120	120	4.80	4.28
EL3130	130	5.20	4.60
EL3140	140	5.60	4.92
EL3150	150	6.00	5.24

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



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Example U-value Calculation: EL3000/TC3000 - Built-up Roofing

Construction		Concrete Deck		Steel Deck		Timber Deck	
		FB	MF	FB	MF	FB	MF
Outside surface resistance		-	-	-	-	-	-
Built-up roofing		12	12	12	12	12	12
Variable layer		See below	See below	See below	See below	See below	See below
Vapour Control Layer (VCL)		-	-	-	-	-	-
Concrete deck		250	250	n/a	n/a	n/a	n/a
Steel deck		n/a	n/a	1.5	1.5	n/a	n/a
Timber deck plywood		n/a	n/a	n/a	n/a	19	19
Cavity between joist @ 11.7% bridging		n/a	n/a	n/a	n/a	150	150
Plasterboard		n/a	n/a	n/a	n/a	12.5	12.5
Inside surface resistance		-	-	-	-	-	-
Variable layer Celotex Product	Thickness (mm)	U-value (W/m ² K)	U-value (W/m ² K)	U-value (W/m ² K)	U-value (W/m ² K)	U-value (W/m ² K)	U-value (W/m ² K)
Celotex EL3000/TC3000	100	0.24	-	0.25	-	0.22	-
Celotex EL3000/TC3000	120	0.19	0.22	0.20	0.23	0.18	0.21
Celotex EL3000/TC3000	130	0.18	0.21	0.18	0.21	0.17	0.20
Celotex EL3000/TC3000	140	0.17	0.19	0.17	0.20	0.16	0.18
Celotex EL3000/TC3000	150	0.16	0.18	0.16	0.19	0.15	0.17

FB = Fully bonded
MF = Mechanically fixed

Installation Guidelines

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

Cold applied systems

For single-ply membranes, the vapour control layer (VCL) should be either polythene or reinforced aluminium foil. The VCL should be loose-laid immediately prior to installation of the roof board and detailed at edges and abutments. The VCL should be sealed and taped to the top surface of the board.

Mechanical fastening

The boards should be laid with all joints tightly butted over the VCL and then mechanically secured through to the deck. When used on metal decks, these roof boards should be laid with the long edges at right angles to the corrugations. When mechanical fasteners are utilised, they should be selected to suit the type of deck used. Celotex recommends the use of thermally broken fixings. Fixings must have a minimum 50mm head or plate washer diameter. Fixings should be installed between 50mm – 150mm from the edges and corners of the board.

The exact number of fixings required for each zone on a flat roof must be calculated by the use of either BS 6399: Part 2: 1997 Code of Practice for Wind Loads, or EN1991-1-4 used with the UK National Annex. A minimum of 6 fixings per board must be used. Where more than 6 fixings per board are required by the wind uplift calculation, the higher figure must be adopted.

Further guidance on fixings and patterns can be sought from fixing manufacturers and in the BRUFMA information document on mechanical fixings for rigid PIR roofboards.

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Installation Guidelines (cont)

Installation of weathering systems

Different types of weathering systems require different installation instructions and guidelines. Advice on the installation of these weathering systems should be sought from the manufacturer or provider of the weathering system type.

Laying pattern

It is recommended that boards are laid with joints break-bonded.

Supporting deck

The supporting deck must provide adequate support for the VCL and insulation board with joints being supported by the ridges of the deck. It must be capable of supporting the static and dynamic design loads and the loads associated with the construction activity without deflection in excess of the limits defined in BS 6399:Part1. The deck must be structurally sound, dry, clean and, where necessary, primed before application of the weathering and insulating system.

Trafficking

Boards are capable of withstanding the trafficking associated with normal roof laying work. However, roofs are generally designed for only occasional lightweight foot traffic or maintenance access. Where more frequent or heavier access is required, protected walkways should be provided. Under no circumstances should the roof be used as a working platform, either during or after the construction programme. Extra care should be taken to protect the insulation and weathering when ballasting.

Loose-laid roof boards under ballasted systems

When the ballasting system is not installed immediately following the application of loose-laid roof boards, additional attachment is required. Please refer to BRUFMA Information Document "Securing PIR & PUR Roof Boards beneath Single-Ply Waterproofing Membranes" for further information.

Use of adhesives

When using adhesives, the installer should take care not to use products that contain chemicals likely to attack the insulating foam such as ketonic solvents. Celotex EL3000 contains no chemicals or solvents likely to damage the PVC membrane. When using adhesives, the installer should check the compatibility of the adhesive with the adhesive manufacturer.

Liquid applied membranes

If liquid applied membrane systems are being considered for use with Celotex EL3000, advice on compatibility and application procedures should be sought directly from the manufacturer of the liquid applied system.

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.

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