



## Masonry Cavity Wall and Plasterboard Laminate

Cavity Wall 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.

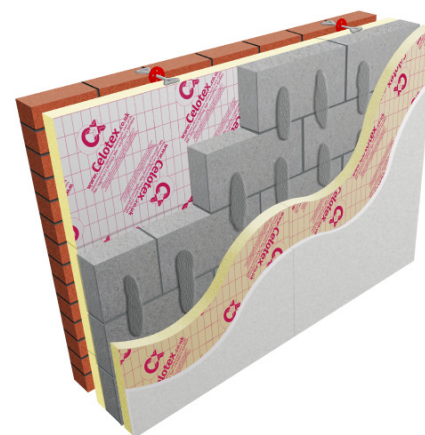
Celotex offers an alternative solution for partial fill cavity wall applications enabling traditional sized cavity wall widths to be maintained.

**Celotex CW4000** provides the partial fill cavity wall solution utilising the product's super low lambda value of 0.022W/mK along with low emissivity aluminium foil facers which provide enhanced thermal performance within a cavity air space.

As a secondary insulation measure, Celotex' plasterboard thermal laminate **PL4000** can be installed on the warm side of the inner leaf, providing additional thermal performance and plasterboard as one product.

This combined solution minimises insulation thickness and offers the following benefits:

- Products with a lambda value of 0.022W/mK providing some of the thinnest insulation solutions available today
- Allows for the traditional cavity space of 100mm to be maintained without changing construction methods and risking the loss of plot space
- Provides an alternative solution for meeting the improved U-values required for Part L 2010
- CW4000 includes low emissivity foil facers giving improved thermal insulation within cavity air spaces
- PL4000 provides insulation and plasterboard as one product helping reduce installation time and offering maximum flexibility to the installer
- PL4000 is suitable for both direct bonding (dot & dab) and mechanical fixing installations
- Provides reliable long term energy savings for buildings



Celotex CW4000 and PL4000

### 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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## Celotex CW4000 Technical Data

Product Code	Thickness (mm)	R-value (m <sup>2</sup> K/W)	Weight (kg/m <sup>2</sup> )
CW4025	25	1.10	0.85
CW4040	40	1.80	1.26
CW4050	50	2.25	1.55
CW4055	55	2.50	1.74
CW4060	60	2.70	1.90
CW4065	65	2.95	2.05
CW4070	70	3.15	2.19
CW4075	75	3.40	2.34
CW4080	80	3.60	2.48
CW4085	85	3.85	2.62
CW4090	90	4.05	2.76
CW4100	100	4.50	3.27



For premium performance including Class O fire performance Celotex CG5000 is suitable for this application.

## Celotex PL4000 Technical Data

Product Code	Thickness (mm)	R-value (m <sup>2</sup> K/W)	Weight (kg/m <sup>2</sup> )
PL4015	15 + 9.5	0.70	6.62
PL4025	25 + 12.5	1.20	9.06
PL4040	40 + 12.5	1.85	9.52
PL4045	45 + 12.5	2.10	9.67
PL4050	50 + 12.5	2.30	9.86
PL4055	55 + 12.5	2.55	10.01
PL4060	60 + 12.5	2.75	10.15
PL4065	65 + 12.5	3.00	10.30

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## Example U-value Calculation: Partial Fill Cavity Wall with Internal Layer of Celotex

		Dot & Dab			Mechanically fixed direct to wall		
		1.13	0.59		0.15	1.13	0.59
Block lambda (W/mk)							
0.15							
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)	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 PL4000	15 + 9.5	0.24	0.23	0.21	0.25	0.24	0.22
Celotex PL4000	25 + 12.5	0.21	0.21	0.19	0.22	0.22	0.22
Celotex PL4000	40 + 12.5	0.19	0.18	0.17	0.19	0.19	0.17
Celotex PL4000	45 + 12.5	0.18	0.18	0.16	0.18	0.18	0.17
Celotex PL4000	50 + 12.5	0.17	0.17	0.16	0.18	0.17	0.16
Celotex PL4000	55 + 12.5	0.17	0.16	0.15	0.17	0.17	0.16
Celotex PL4000	60 + 12.5	0.16	0.16	0.15	0.16	0.16	0.15
Celotex PL4000	65 + 12.5	0.15	0.15	0.14	0.16	0.15	0.15

All U-values shown above assume 50mm CW4000 as the partial fill cavity wall solution with a brick outer leaf (lambda 0.77W/mK) and a 3mm plaster skim. Installing alternative thicknesses of CW4000 within the cavity wall will have an impact on achieved U-value. This solution is also possible using Celotex PL4000 mechanically fixed using battens. For further information and U-values, please visit our online U-value calculator or contact the Celotex Technical Centre.

### Installation Guidelines for Celotex CW4000

- The wall ties used must be suitable for the structural requirements and incorporate a retaining clip to ensure that the insulation is held permanently in place. The insulation is fitted against the inner leaf of the wall.
- BBA-approved wall ties and clips should be used wherever possible. The advice of the wall tie manufacturers should be followed, but Celotex does not consider butterfly ties to be suitable for use with partial-fill cavity insulation.
- The first row of board-retaining wall ties should be installed at least one course below the damp proof course (DPC) and positioned at maximum 600mm centres horizontally, to provide a minimum support of two ties per 1200mm board.
- The second and subsequent rows of ties should be installed at 450mm centres vertically and maximum 900mm centres horizontally. Where required for structural purposes, it may be necessary to install ties at closer centres.
- Always ensure that each full or cut board is retained by no fewer than three ties around its perimeter.
- Fit the boards between the wall ties, and secure in place with a retaining clip on each tie. Ensure that horizontal and vertical joints are tightly butted to minimise heat loss.
- At openings such as doors and windows, use a proprietary insulated cavity closer.
- Where necessary, cut the boards to size using the Celotex Insulation Saw and straight edge.
- Where the cavity is closed at or below DPC level by a methane barrier membrane, use mechanical fixings to secure the board to the brickwork above the DPC. Avoid puncturing the gas barrier membrane.
- At internal (see Fig.1) and external (see Fig.2) angles, ensure that the thickness of the board continues around the angle and that sufficient wall ties are used.



Fig. 1

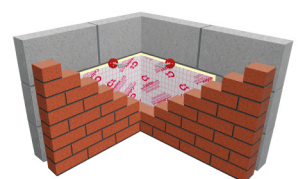


Fig. 2

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## Gable walls

At gable walls (see Fig.3) it is recommended that Celotex CW4000 is taken up to the underside of the roof verges. In cold roof constructions, the product should extend at least 250mm above the ceiling insulation. The top edge of the insulation should be protected with a cavity tray.

## Cavity fire barriers

The requirements of the Building Regulations relating to fire spread in cavity walls can be met in buildings of all purpose groups without the need for cavity barriers, provided the construction complies with the provisions detailed in: Approved Document B, Volume 1, Diagram 13; and Volume 2, Diagram 34. For further information please refer to Celotex BBA certificate 94/3080

Where cavity fire barriers are required by national building regulations, they should be installed in line with the manufacturer's instructions.

## Cavity obstructions

Unavoidable projections into the cavity, such as floor edge beams and steel columns, need careful detailing and may require a horizontal cavity tray.

To comply with the requirement of the National House Building Council (NHBC) or Housing Association Property Mutual (HAPM), a minimum 50mm clear residual cavity should be provided.

For buildings up to 12m high, a minimum clear cavity width of 25mm may be acceptable, subject to exposure. The 25mm minimum constructed residual cavity width must be clear of all obstructions.

## Installation Guidelines for Celotex PL4000

### Installation guidelines for internal lining systems using dot and dab

- Ensure that existing walls are permeable. Strip any gloss paint or vinyl wallpaper.
- Use the Celotex Insulation Saw to cut the 1200mm x 2400mm Celotex PL4000 boards to fit the floor-to-ceiling height of the room.
- Ensure a continuous seal at skirting, ceiling level and at openings by applying a continuous band of gypsum adhesive. Gypsum adhesive at perimeter edges can be replaced with thin timber battens.
- Apply further dabs of gypsum adhesive. This should be in accordance with the adhesive manufacturer's instructions.
- Align sheets against the dabs and secure into correct position.
- Once the dabs are set, it is recommended that additional secondary fixings be applied to the Celotex PL4000. Exact fixing details should be in accordance with the recommendations of the fixing manufacturer.
- Joints between the boards must be tightly butted, taped and jointed using appropriate tape and jointing material to create the vapour control layer (VCL).
- Line window and door reveals with thinner Celotex PL4000 boards to reduce the risk of thermal bridging. Fix a batten around the edge of the opening and scribe the board to fit the reveal. Cut the dry lining to suit and mechanically fix into the masonry reveal using proprietary fixings. Finish using an angle fillet at the frame and an angle bead or scrim tape at external corners.
- Please note that to avoid the load being directly applied to the Celotex PL4000, suitable mechanical fixings should be used for other internal fittings. Advice on suitable fixings should be sought directly from the fixing manufacturer.
- Please note that where existing walls are subject to the ingress of excessive moisture, it is recommended that Celotex PL4000 should be installed using mechanical fixings rather than a direct bonding technique.

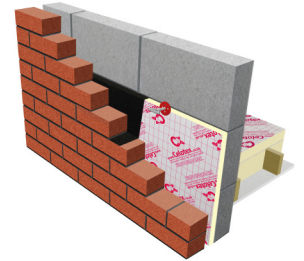


Fig. 3

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## Installation guidelines for internal lining systems using mechanical fixings

- Ensure that existing walls are permeable. Strip any gloss paint or vinyl wallpaper.
- Use the Celotex Insulation Saw to cut the 1200mm x 2400mm Celotex PL4000 boards to fit the floor-to-ceiling height of the room.
- Secure Celotex PL4000 with suitable mechanical fixings. Fixing details should be in accordance with the fixing manufacturer's instructions.
- Joints between the boards must be tightly butted, taped and jointed using appropriate tape and jointing material to create the vapour control layer (VCL).
- Line window and door reveals with thinner Celotex PL4000 boards to reduce the risk of thermal bridging. Fix a batten around the edge of the opening and scribe the board to fit the reveal. Cut the dry lining to suit and mechanically fix into the masonry reveal using proprietary fixings. Finish using an angle fillet at the frame and an angle bead or scrim tape at external corners.

## Installation guidelines for internal lining systems using mechanical fixings to timber battens

- Ensure that existing walls are permeable. Strip any gloss paint or vinyl wallpaper.
- Fix treated softwood timber battens to the masonry. They should be set out a maximum of 600mm vertical centres to coincide with the edges of the boards. As a minimum requirement, horizontal battens should be used to support the top and bottom of the board edges.
- Secure Celotex PL4000 with suitable mechanical fixings. Fixing details should be in accordance with the fixing manufacturer's instructions.
- Joints between the boards should be tightly butted and finished by taping and jointing using appropriate tape and jointing material to create the VCL.

## Installation guidelines for internal lining systems using mechanical fixings to metal lining systems

- Celotex PL4000 boards can be fixed to a number of proprietary metal frame lining systems. The system should be fixed in accordance with the manufacturer's instructions.

## Certifications and Accreditations

Celotex product CW4000 is covered by BBA Agreement Certificate No 94/3080 & 12/4950. To download a copy of this certificate, visit the 'literature' pages of the website at [celotex.co.uk](http://celotex.co.uk)

## Further Information

If you wish to contact Celotex, please visit [celotex.co.uk](http://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](http://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 Limited**  
Lady Lane Industrial Estate,  
Hadleigh, Ipswich  
Suffolk IP7 6BA

**T: 01473 820850**

**W: [celotex.co.uk](http://celotex.co.uk)**

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**Celotex Technical Centre: 01473 820850**

[celotex.co.uk](http://celotex.co.uk)