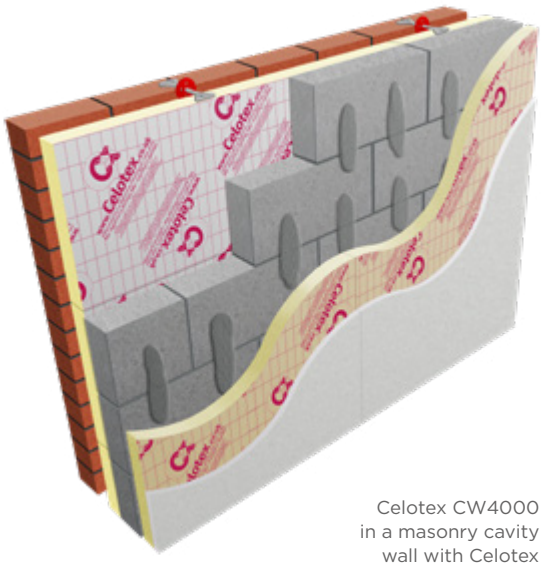
Partial Fill Masonry Cavity Wall and Plasterboard Laminate

Celotex SAINT-GOBAIN

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

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



Celotex CW4000 in a masonry cavity wall with Celotex PL4000 insulated plasterboard

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

- 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 to assist in meeting the improved U-values required for national Building Regulations
- 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
- Can be used to provide reliable long term energy savings for buildings

Celotex CW4000 Technical Data

Thickness (mm)	R-value (m^2K/W)	Maximum Board Weight (kg/m^2)
CW4040	1.80	1.41
CW4050	2.25	1.92
CW4060	2.70	2.26
CW4075	3.40	2.78
CW4085	3.85	3.13
CW4100	4.50	4.15

Celotex PL4000 Technical Data

Thickness (mm)	R-value (m^2K/W)	Maximum Board Weight (kg/m^2)
PL4015 + 12.5†	0.70‡	9.69‡
PL4025 + 12.5†	1.20‡	9.99‡
PL4040 + 12.5†	1.85‡	10.46‡
PL4050 + 12.5†	2.30‡	10.96‡
PL4060 + 12.5†	2.75‡	11.31‡
PL4065 + 12.5†	3.00‡	11.48‡

† 12.5mm tapered edge plasterboard is laminated to the insulation thickness

‡ insulation component only

ENERGY ASSESSMENTS ...by Celotex

We have an experienced team of energy assessors who can carry out SAP calculations, water calculations, airtightness testing and much more. Contact us.

Celotex presents a comprehensive range of thermal bridging models featuring our PIR insulation products. This tool helps you identify the build-up required to reduce heat loss through a typical junction of elements or at openings. Sign up now.

Example U-value calculation: partial fill cavity wall with internal layer of Celotex

		Dot & Dab			Mechanically fixed direct to wall		
Block lambda		**1.13**	**0.59**	**0.15**	**1.13**	**0.59**	**0.15**
Variable Layer	**Thickness (mm)**	**U-value (W/m2K)**	**U-value (W/m2K)**	**U-value (W/m2K)**	**U-value (W/m2K)**	**U-value (W/m2K)**	**U-value (W/m2K)**
Celotex PL4000	15 + 12.5	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	0.20
Celotex PL4000	40 + 12.5	0.19	0.18	0.17	0.19	0.19	0.17
Celotex PL4000	50 + 12.5	0.17	0.17	0.16	0.18	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	0.16	0.15

Note: Celotex PL4000 boards should be tightly butted, taped and jointed to create the vapour control layer (VCL)

Construction 103mm brick or 100mm block | cavity | 50mm Celotex CW4000 | 103mm brick or 100mm block | Celotex PL4000 with joints taped

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

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

- 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.

Cavity fire barriers

You should consult your building designer and Building Control Officer regarding compliance with the relevant provisions of the Building Regulations.

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.

You should consult with the National House Building Council (NHBC) or Housing Association Property Mutual (HAPM) about their minimum clear residual cavity requirements.

Gable walls

At gable walls (see Fig.3) take Celotex CW4000 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.

Fig. 1

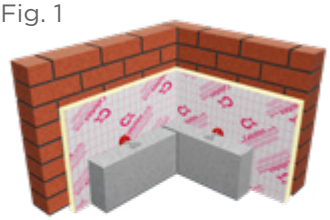


Fig. 2

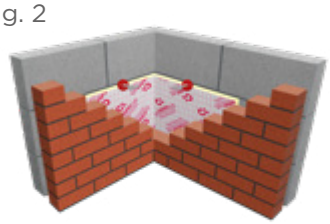


Fig. 3

Installation guidelines for Celotex PL4000

Installation guidelines for internal lining systems using dot and dab:

- 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.

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.

Installation guidelines for internal lining systems using mechanical fixings:

- 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:

- 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 must be tightly butted, taped and jointed using appropriate tape and jointing material to create the vapour control layer (VCL).

Following the Independent Review of Building Regulations and Fire Safety (the Hackitt review), the UK government is considering changes to the Building Regulations. You should consult your building designer and Building Control Officer before specifying any particular product.

Certifications and accreditations
Celotex products GA4000 and XR4000 are covered by BBA Agrément Certificate No 16/5343 and 16/5357. To download a copy of this certificate, visit the 'literature' pages on our website.

Further information
If you wish to contact Celotex, please do so through the 'contact us' page on our website.

For information regarding storage, installation and handling of Celotex products, or for health & safety information, please refer to our online 'literature' pages.