



Basement Applications

Floor Insulation

Celotex
 Insulation Specialists

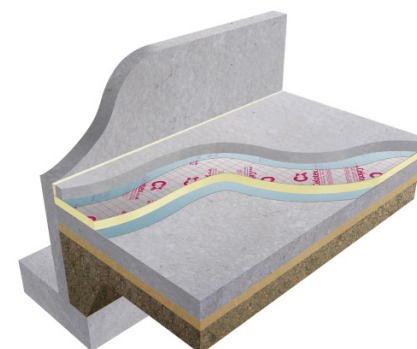
Introduction

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 GA4000**, **Celotex XR4000** or **Celotex FF4000** and **Celotex PL4000** high performance thermal insulation in basement refurbishment projects to minimise insulation thickness and give the following benefits:

- Achieve compliance to Building Regulations whilst ensuring thin solutions
- Creates additional, highly thermal efficient living space
- Tapered edge plasterboard offers the installer maximum installation flexibility and speed



Celotex GA4000 over slab with screed

Celotex GA4000 Technical Data

Product Code	Thickness (mm)	R-value (m ² K/W)	Weight (kg/m ²)
GA4050	50	2.25	1.55
GA4055	55	2.50	1.74
GA4060	60	2.70	1.90
GA4065	65	2.95	2.05
GA4070	70	3.15	2.19
GA4075	75	3.40	2.34
GA4080	80	3.60	2.48
GA4085	85	3.85	2.62
GA4090	90	4.05	2.76
GA4100	100	4.50	3.27

Celotex XR4000 Technical Data

Product Code	Thickness (mm)	R-value (m ² K/W)	Weight (kg/m ²)
XR4110	110	5.00	3.58
XR4120	120	5.45	3.88
XR4130	130	5.90	4.19
XR4140	140	6.35	4.49
XR4150	150	6.80	4.79
XR4165	165	7.50	5.43
XR4200	200	9.05	6.53

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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Celotex FF4000 Technical Data

Product Code	Thickness (mm)	R-value (m ² K/W)	Weight (kg/m ²)
FF4050	50	2.25	1.98
FF4070	70	3.15	2.68
FF4075	75	3.40	2.86
FF4085	85	3.85	3.21
FF4090	90	4.05	3.38
FF4100	100	4.50	3.73
FF4125	125	5.65	4.61



For premium performance including Class O fire performance Celotex FR5000 is suitable for this application.

Example U-value Calculation: Ground Floor - Concrete Slab

Celotex Product	Thickness (mm)	Perimeter / Area Ratio									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
GA4000 / FF4000	50	0.11	0.16	0.18	0.20	0.21	0.22	0.23	0.23	0.24	0.25
GA4000	55	0.11	0.15	0.17	0.19	0.20	0.21	0.21	0.22	0.22	0.23
GA4000	60	0.11	0.15	0.17	0.18	0.19	0.20	0.20	0.21	0.21	0.22
GA4000	65	0.10	0.14	0.16	0.17	0.18	0.19	0.20	0.20	0.20	0.21
GA4000 / FF4000	70	0.10	0.14	0.17	0.17	0.18	0.18	0.19	0.19	0.19	0.20
GA4000 / FF4000	75	0.10	0.13	0.15	0.16	0.17	0.18	0.18	0.18	0.19	0.19
GA4000	80	0.10	0.13	0.14	0.16	0.16	0.17	0.17	0.18	0.18	0.18
GA4000 / FF4000	85	0.09	0.12	0.14	0.15	0.16	0.16	0.17	0.17	0.17	0.17
GA4000 / FF4000	90	0.09	0.12	0.13	0.14	0.15	0.16	0.16	0.16	0.17	0.17
GA4000	95	0.09	0.12	0.13	0.14	0.15	0.15	0.15	0.16	0.16	0.16
GA4000 / FF4000	100	0.09	0.11	0.13	0.14	0.14	0.15	0.15	0.15	0.15	0.16
XR4000	110	0.08	0.11	0.12	0.13	0.13	0.14	0.14	0.14	0.14	0.16
XR4000	120	0.08	0.10	0.11	0.12	0.13	0.13	0.13	0.13	0.13	0.14
FF4000	125	0.08	0.10	0.11	0.12	0.12	0.13	0.13	0.13	0.13	0.13
XR4000	130	0.08	0.10	0.11	0.11	0.12	0.12	0.12	0.13	0.13	0.13

Based on 65mm screed and 20mm insulation as perimeter upstand

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Celotex requirement to meet target U-values for a basement floor are determined by a number of variable factors.

- Type of surrounding retaining soil. This can be clay / silt or sand / gravel or rock
- The thickness of the basement walls
- The height of basement walls from finished floor level to ground level
- The ratio of exposed floor perimeter to the total floor area (PA ratio)

In addition to the above, basement walls take into account the thermal performance of the basement floor. Please contact the Celotex Technical Centre to confirm which boards meet target U-values.

Installation Guidelines

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

Basement floors - Above concrete slab

- The surface of the slab should be smooth, flat and free from projections. If required use a thin layer of sand blinding on a rough slab to ensure the insulation boards are continuously supported.
- Ensure the basement floor is protected from external ground water penetrating the floor with a suitable waterproof system.
- A 500 gauge separating layer is laid over the Celotex boards to prevent screed migration, act as a vapour barrier and prevent a reaction between the wet screed and the foil facer.
- 20mm TB4000 is positioned around the exposed perimeter as an upstand. It is usually the depth of the screed.
- Apply a sand/cement or self levelling screed over the VCL and Celotex insulation boards to a minimum thickness of 65mm.

Basement walls

- Ensure the basement walls is protected from external ground water penetrating the wall with a suitable waterproof system.
- Following manufacturer guidelines to maintain waterproof seal, fix 25mmx47mm battens to the masonry at 600mm vertical centres to coincide with the board edges with suitable fixings.
- Celotex PL4000 is then mechanically fixed to the battens using suitable fixings. Specific advice on fixings should be sourced directly from the fixing manufacturer.
- Joints between boards should be tightly butted and finished by taping and jointing using appropriate tape and jointing material to create the VCL.

Certifications and Accreditations

Celotex products GA4000, XR4000 and FF4000 are covered by BBA Agreement Certificate No 95/3197. 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 Limited
Lady Lane Industrial Estate,
Hadleigh, Ipswich
Suffolk IP7 6BA

T: 01473 820850
W: celotex.co.uk

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