



Concrete Slab Floor Applications

Floor Insulation

Celotex
 Insulation Specialists

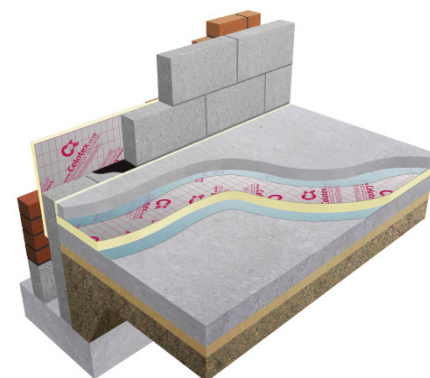
Introduction

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** high performance thermal insulation in concrete slab floor applications to minimise insulation thickness and give the following benefits:

- Easy to cut boards to fit in most spaces
- Provides reliable long term energy savings for buildings
- Excellent dimensional stability
- No thermal bridging at floor edges
- Tightly butted joints for insulation continuity



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



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

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: 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	0.12	0.18	0.22	0.25	-	-	-	-	-	-
GA4000	55	0.12	0.17	0.21	0.22	0.24	0.25	-	-	-	-
GA4000	60	0.12	0.17	0.20	0.21	0.23	0.24	0.24	0.25	-	-
GA4000	65	0.11	0.16	0.19	0.20	0.21	0.22	0.23	0.24	0.24	0.25
GA4000 / FF4000	70	0.11	0.15	0.18	0.19	0.20	0.21	0.22	0.23	0.23	0.23
GA4000 / FF4000	75	0.11	0.15	0.17	0.18	0.20	0.20	0.21	0.21	0.22	0.22
GA4000	80	0.11	0.14	0.16	0.18	0.19	0.19	0.20	0.20	0.21	0.21
GA4000 / FF4000	85	0.10	0.14	0.16	0.17	0.18	0.19	0.19	0.20	0.20	0.20
GA4000 / FF4000	90	0.10	0.13	0.15	0.16	0.17	0.18	0.18	0.19	0.19	0.19
GA4000	95	0.10	0.13	0.15	0.16	0.17	0.17	0.18	0.18	0.18	0.18
GA4000 / FF4000	100	0.10	0.13	0.14	0.15	0.16	0.17	0.17	0.17	0.17	0.18
XR4000	110	0.09	0.12	0.13	0.14	0.15	0.15	0.16	0.16	0.16	0.16
XR4000	120	0.09	0.11	0.13	0.13	0.14	0.14	0.15	0.15	0.15	0.15
FF4000	125	0.09	0.11	0.12	0.13	0.14	0.14	0.14	0.14	0.15	0.15
XR4000	130	0.08	0.11	0.12	0.13	0.13	0.14	0.14	0.14	0.14	0.14
XR4000	140	0.08	0.10	0.11	0.12	0.12	0.13	0.13	0.13	0.13	0.13
XR4000	150	0.08	0.10	0.11	0.11	0.12	0.12	0.12	0.12	0.13	0.13
XR4000	165	0.07	0.09	0.10	0.11	0.11	0.11	0.11	0.11	0.12	0.12
XR4000	200	0.07	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10

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

Installation Guidelines

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

Over slab installation guidelines

- Install a damp proof membrane below the Celotex. This can either be over the top or below the slab. The damp proof membrane must provide continuity with the damp proof course in the surrounding walls.
- Level the surface of the slab; it should be smooth and free of projections.
- If required, use a thin layer of sand blinding on a rough, tamped slab to ensure that the insulation boards are continuously supported.
- Use the **Celotex Insulation Saw** to cut and fit insulation upstand to floor perimeter, to meet a minimum R-value of 0.75m²K/W, (i.e. Celotex TB4020). The upstand depth should be equal to the sum of the slab insulation and the screed thickness. The upstand thickness should not exceed the combined thickness of the wall linings.
- Lay the insulation boards directly onto the prepared slab with all joints tightly butted.
- Lay a polythene vapour control layer (VCL) over the insulation to minimise the risk of condensation forming at the insulation/slab interface and to prevent liquid screed migration.
- Apply a sand/cement or self levelling screed over the VCL and Celotex insulation boards to a minimum thickness of 65mm.

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Installation Guidelines (cont)

Use scaffold boards or other protection to prevent wheelbarrows and other traffic damaging the insulation.

These recommendations are suitable for normal domestic floor loadings. If higher loadings are required, it may be necessary to increase the screed thickness and provide reinforcement within the screed. Consult a structural engineer or a specialist flooring contractor.

Under slab installation guidelines

- Level hardcore and blind with sand
- Install damp proof membrane and lap into damp proof course
- Use the **Celotex Insulation Saw** to cut and fit insulation, thickness to achieve required U-value
- Use the **Celotex Insulation Saw** to cut and fit insulation upstand to floor perimeter, to meet a minimum R-value of 0.75m²K/W, (i.e. Celotex TB4020). Height of insulation to coincide with required finished floor level.
- Lay a polythene vapour control layer (VCL) over the insulation to minimise the risk of condensation forming at insulation/slab interface.
- Lay concrete to required finished floor level and smooth over with float finish.

Chipboard floor finish

A VCL should be laid over the Celotex insulation boards and turned up 100mm at room perimeters, behind the skirting. It is recommended good practice that all joints should be lapped 150mm and sealed.

The chipboard must be minimum 18mm tongued and grooved flooring grade type C4 to BS 5669. Lay the chipboard with staggered joints, glued with a woodworking adhesive.

Provide a 10mm–12mm gap at all perimeters and abutments to allow for expansion. This can be achieved by the use of temporary wedges.

Where chipboard is butted together without a tongued and grooved joint and all external doorways (for the width of the threshold), a treated timber batten must be used in lieu of the insulation boards.

Certifications and Accreditations

Celotex products GA4000, XR4000, FR5000 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.

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