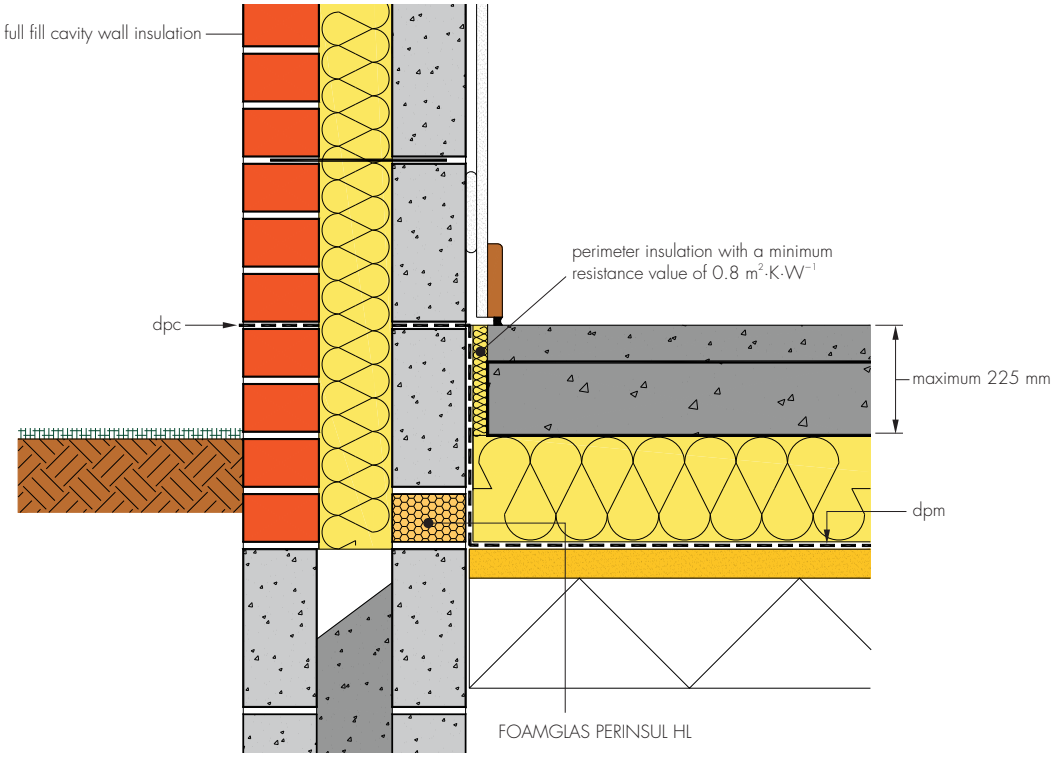
FOAMGLAS® PERINSUL HL

External Masonry Cavity Wall. Full Fill

Concrete ground bearing floor — Insulation below slab

CD0056



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Notes

- FOAMGLAS PERINSUL HL 65 mm by 100 mm with $\lambda = 0.058$ W·m^{-1}·K^{-1}
- 100 mm thickness of inner leaf blocks
- ensure that the wall and floor insulations fully overlap both sides of the Perinsul HL unit
- maximum 225 mm concrete floor slab (including floor finish)
- perimeter insulation with a minimum resistance value of 0.8 m^2·K^1·W^{-1} (eg 20 mm of insulation with $\lambda = 0.025$ W·m^{-1}·K^{-1}) and installed up to top of floor finish
- ensure that the full fill wall insulation is installed correctly between the inner and outer leaf of the cavity wall with no gaps
- ensure that the full fill wall insulation is fit for purpose with regard to water absorption and wall exposure
- ensure that the floor insulation tightly abuts blockwork wall
- ensure there is a seal between the wall and the floor air barrier, and that there are no gaps between skirting board and the floor
- other improved air barrier continuity solutions can be used.

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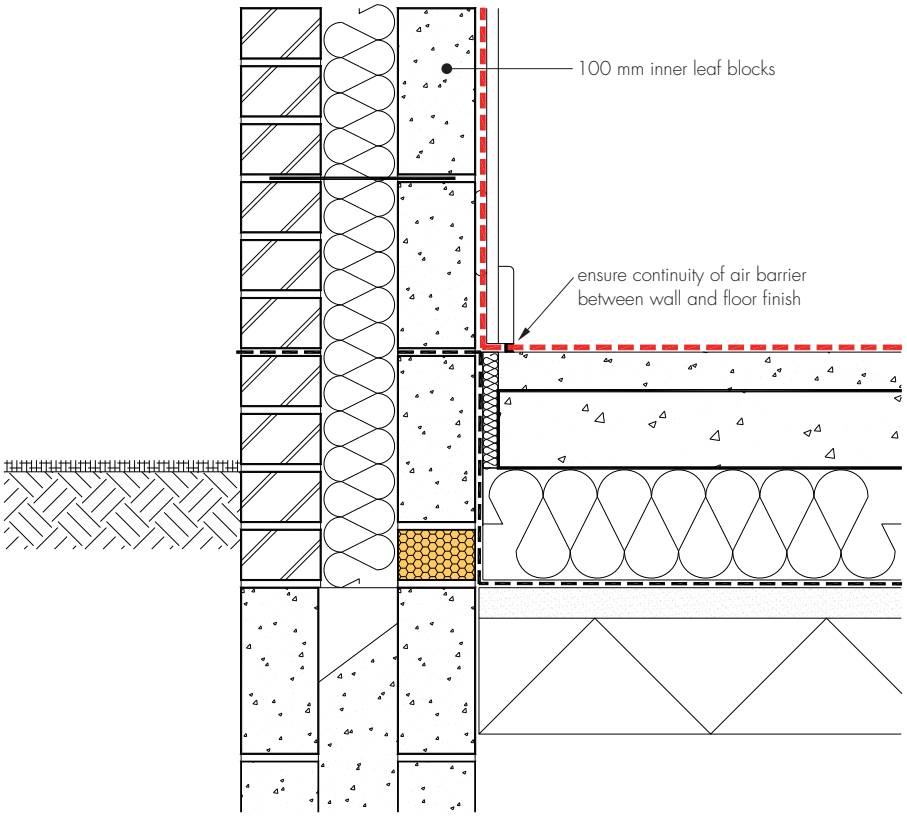

denotes 'notional' line of continuous air barrier to be maintained

This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Building Regulations.

Calculated ψ-values for this detail

Case 1: Floor U value between 0.08 and 0.11 W·m^{-2}·K^{-1} (for a perimeter/area ratio of 0.25)

For example, floor U values for the range shown above can be achieved with insulation thickness between 130 mm and 200 mm with $\lambda \leqslant 0.023$ W·m^{-1}·K^{-1}.

	Wall U value less than or equal to 0.20 W·m^{-2}·K^{-1}		Wall U value between 0.21 and 0.25 W·m^{-2}·K^{-1}		Wall U value between 0.26 and 0.30 W·m^{-2}·K^{-1}	
Inner leaf block conductivity (W·m^{-1}·K^{-1})	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor
0.19	0.086	0.95	0.093	0.94	0.097	0.94
0.57	0.098	0.94	0.107	0.93	0.112	0.92
1.13	0.108	0.93	0.115	0.93	0.122	0.92

The Table below provides U values for the same floor construction for P/A ratios other than 0.25. The ψ-values can only be used when the actual floor U value is less than that given for the P/A ratio relevant to the dwelling in question:

P/A (m·m^{-2})	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
U (W·m^{-2}·K^{-1})	0.11	0.11	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14

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Case 2: Floor U value between 0.12 and 0.19 W·m^{-2}·K^{-1} (for a perimeter/area ratio of 0.25)

For example, floor U values for the range shown above can be achieved with insulation thickness between 50 mm and 125 mm and with $\lambda \leqslant 0.023$ W·m^{-1}·K^{-1}.

	Wall U value less than or equal to 0.20 W·m^{-2}·K^{-1}		Wall U value between 0.21 and 0.25 W·m^{-2}·K^{-1}		Wall U value between 0.26 and 0.30 W·m^{-2}·K^{-1}	
Inner leaf block conductivity (W·m^{-1}·K^{-1})	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor
0.19	0.093	0.95	0.103	0.94	0.109	0.93
0.57	0.105	0.94	0.111	0.93	0.122	0.92
1.13	0.117	0.93	0.124	0.92	0.132	0.92

The Table below provides U values for the same floor construction for P/A ratios other than 0.25. The ψ-values can only be used when the actual floor U value is less than that given for the P/A ratio relevant to the dwelling in question:

P/A (m·m^{-2})	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
U (W·m^{-2}·K^{-1})	0.18	0.19	0.21	0.22	0.23	0.23	0.24	0.25	0.25	*0.26*	*0.26*	*0.27*	*0.27*	*0.28*	*0.28*	*0.28*	*0.28*

Note: The U values shown in italics are above the limit floor U value according to The Building Regulations 2010 (England and Wales) (as amended).

Case 3: Floor U value ⩾ 0.20 W·m^{-2}·K^{-1} (for a perimeter/area ratio of 0.25)

For example, floor U values for the range shown above can be achieved using 45 mm of insulation with $\lambda = 0.023$ W·m^{-1}·K^{-1}.

	Wall U value less than or equal to 0.20 W·m^{-2}·K^{-1}		Wall U value between 0.21 and 0.25 W·m^{-2}·K^{-1}		Wall U value between 0.26 and 0.30 W·m^{-2}·K^{-1}	
Inner leaf block conductivity (W·m^{-1}·K^{-1})	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor	ψ-value (W·m^{-1}·K^{-1})	Temperature factor
0.19	0.069	0.95	0.078	0.94	0.080	0.93
0.57	0.080	0.94	0.087	0.93	0.093	0.92
1.13	0.088	0.93	0.095	0.92	0.104	0.91

The Table below provides U values for the same floor construction for P/A ratios other than 0.25. The ψ-values can only be used when the actual floor U value is greater than that given for the P/A ratio relevant to the dwelling in question:

P/A (m·m^{-2})	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
U (W·m^{-2}·K^{-1})	0.18	0.20	0.22	0.23	0.24	0.25	*0.26*	*0.26*	*0.27*	*0.27*	*0.28*	*0.28*	*0.29*	*0.29*	*0.30*	*0.30*	*0.30*

Note: The U values shown in italics are above the limit floor U value according to The Building Regulations 2010 (England and Wales) (as amended).

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In all the example calculations, wall ties are stainless steel double triangle types (2.5 per m^2), with 100 mm inner leaf blocks.

Wall U values $\leqslant$ 0.30 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:

— 100 mm $\leqslant$ insulation thickness $\leqslant$ 115 mm with $\lambda \leqslant$ 0.036 $W \cdot m^{-1} \cdot K^{-1}$ and inner block conductivity of 0.19 $W \cdot m^{-1} \cdot K^{-1}$ or less

— 110 mm $\leqslant$ insulation thickness $\leqslant$125 mm with $\lambda \leqslant$ 0.036 $W \cdot m^{-1} \cdot K^{-1}$ and inner block conductivity of 1.13 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant$ 0.25 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:

— 120 mm $\leqslant$ insulation thickness $\leqslant$ 150 mm with $\lambda \leqslant$ 0.036 $W \cdot m^{-1} \cdot K^{-1}$ and inner block conductivity of 0.19 $W \cdot m^{-1} \cdot K^{-1}$ or less

— 130 mm $\leqslant$ insulation thickness $\leqslant$ 160 mm with $\lambda \leqslant$ 0.036 $W \cdot m^{-1} \cdot K^{-1}$ and inner block conductivity of 1.13 $W \cdot m^{-1} \cdot K^{-1}$ or less

Wall U values $\leqslant$ 0.20 $W \cdot m^{-2} \cdot K^{-1}$ can be achieved with:

— 155 mm minimum insulation thickness with $\lambda \leqslant$ 0.036 $W \cdot m^{-1} \cdot K^{-1}$ and inner block conductivity of 0.19 $W \cdot m^{-1} \cdot K^{-1}$ or less

— 165 mm minimum insulation thickness with $\lambda \leqslant$ 0.036 $W \cdot m^{-1} \cdot K^{-1}$ and inner block conductivity of 1.13 $W \cdot m^{-1} \cdot K^{-1}$ or less.

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Guidance checklist

Date: ..... Site manager/supervisor: .....

Site name: ..... Plot No: .....

Ref	Item	Yes/No Inspected (initials and date)
1	Is the FOAMGLAS PERINSUL HL insulated block as specified? — Dimensions: width 100 mm and thickness 65 mm	☐ ☐ .....
	— Thermal conductivity of 0.058 $W \cdot m^{-1} \cdot K^{-1}$.	☐ ☐ .....
2	Are the inner leaf blocks 100 mm thick?	☐ ☐ .....
3	Is the perimeter insulation as specified? — minimum resistance of 0.8 $m^2 \cdot K^1 \cdot W^{-1}$ (eg 20 mm of insulation with λ = 0.025 $W \cdot m^{-1} \cdot K^{-1}$)	☐ ☐ .....
	— installed up to top of floor finish.	☐ ☐ .....
4	Is the FOAMGLAS PERINSUL HL unit overlapped with insulation both sides?	☐ ☐ .....
5	Is the full fill wall insulation installed correctly with no gaps?	☐ ☐ .....
6	Is the full fill wall insulation appropriate for moisture and wall exposure?	☐ ☐ .....
7	Is the screed and floor finish a maximum thickness of 225 mm?	☐ ☐ .....
8	Is the floor insulation firmly against the blockwork wall leaving no gaps?	☐ ☐ .....
9	Is the continuity of the air barrier between the floor and the wall achieved? If not, please provide details.	☐ ☐ .....

Notes (include details of any corrective action)

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