

U-Values of Elements

A guide to the specification of insulation materials in order to achieve compliance with Approved Document L1B 2010 of the Building Regulations for small domestic works.



The guidance contained in this document has been prepared by the Hertfordshire Technical Forum for Building Control.

All data relating to specific products has been sourced from the manufacturers at the time of print. They are typical examples and are NOT specifically recommended by Local Authority Building Control. All the listed materials must be installed in strict accordance with manufacturers guidance and with due regard to the need to ensure continuity of insulation and a reasonable standard of airtightness.

The specifications listed are only suggestions as to how the necessary thermal performance can be achieved. Other specifications that can be shown to be compliant with the Building Regulations will be accepted by Building Control.

Introduction

Members of the BBA Competency Scheme for U-value and condensation risk analysis have been pleased to work with Hertfordshire Building Control Technical Forum in updating this Technical Note 10. The scheme members, Knauf Insulation, Kingspan Insulation, Recticel Insulation, Rockwool and Sheffield Insulations Group Technical Services, made the necessary calculations and populated the matrix provided with U-values calculated under the auspices of the competency scheme, using the competent persons at their disposal.

The content of the scheme has been devised in association with TIMSA, the Thermal Insulation Manufacturers and Suppliers Association, which includes the above companies who continue to participate in maintaining its validity with ongoing development. The scheme is however open to non-TIMSA members as well, and provides reassurance that the calculations being provided are supplied by an individual or company that has been subject to a rigorous and ongoing independent assessment process.

The assessment process consists of the following steps,

- an initial screening, based on sample calculations designed to explore understanding of the underlying principles of the key convention documents BR 443, BS EN ISO 6946 and BS EN ISO 13370.
- an office inspection to examine the company's quality system and examples of actual calculations
- issue of a Certificate to the company that employs the Competent Person(s), defining the individual areas of competency
- ongoing surveillance.

Scheme members are required to demonstrate appropriate technical competency and in-house procedural controls to ensure that their declared calculations are reasonable.

The Competent Person is identified within the dedicated scheme logo by the use of a unique number for each individual, an example is shown in the illustration to the right. To access a list of current certificate holders and view the scheme document, please visit the BBA website.



For more information on the scheme, please e-mail competencyscheme@bba.star.co.uk or call 01923 665300.

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Note Pages 15 and 21 give information on the thermal properties of many of the building block and insulation products currently on the market. This enables the designer to select alternatives to the listed specifications that have equivalent performance.

HERTS TECHNICAL FORUM TECHNICAL NOTE 10
EXAMPLES OF GROUND FLOOR INSULATION
Compliance with Approved Document L1B 2010

SUSPENDED TIMBER GROUND FLOOR
U-Value achieved maximum 0.22W/m²K

| Required thickness of insulation/mm | | | | | | | | | | |
|---|-----------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Product | λ-value | Perimeter/Area Ratio | | | | | | | | |
| | | 1.0 | 0.9 | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 |
| Kingspan TF70 | 0.022 | 75 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 35 |
| Celotex FR4000 | 0.022 | 75 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 35 |
| EcoTherm Eco-Versal | 0.022 | 75 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 35 |
| Recticel Eurothane GP | 0.022 | 75 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 35 |
| Xtratherm XTUF | 0.022 | 75 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 35 |
| Jablite Jabfloor Premium 70 | 0.030 | 140 | 140 | 130 | 130 | 125 | 120 | 115 | 105 | 80 |
| Jablite Jabfloor 70 | 0.038 | 160 | 160 | 160 | 155 | 150 | 145 | 135 | 120 | 100 |
| Rockwool Flexi | 0.038 0.035* | 160 | 160 | 160 | 140 | 140 | 140 | 140 | 120 | 90 |
| Rockwool Roll | 0.044 | 200 | 170 | 170 | 170 | 170 | 170 | 150 | 150 | 100 |
| Knauf Insulation Earthwool Loft Roll 40 | 0.040 | 170 | 170 | 170 | 170 | 170 | 150 | 150 | 150 | 100 |
| Knauf Insulation Earthwool Loft Roll 44 | 0.044 | 200 | 200 | 200 | 170 | 170 | 170 | 150 | 150 | 100 |

FLOATING FLOOR
U-Value achieved maximum 0.22W/m²K

| Required thickness of insulation/mm | | | | | | | | | | |
|---|------------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Product | λ-value | Perimeter/Area Ratio | | | | | | | | |
| | | 1.0 | 0.9 | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 |
| Kingspan* Kooltherm K3 | 0.020 – 0.023 | 95 | 95 | 90 | 85 | 85 | 75 | 70 | 60 | 35 |
| Kingspan Thermafloor TF70 | 0.022 | 75 | 75 | 70 | 70 | 65 | 60 | 55 | 45 | 30 |
| Kingspan Thermafloor TF73 | 0.029 | Nm | Nm | Nm | Nm | Nm | 98 | 93 | 79 | 58 |
| Celotex GA4000 | 0.022 | 75 | 75 | 70 | 70 | 65 | 60 | 55 | 45 | 30 |
| Recticel Eurothane GP | 0.022 | 75 | 75 | 70 | 70 | 65 | 60 | 55 | 45 | 30 |
| Knauf Insulation Polyfoam Floorboard Standard | 0.029 | 100 | 115 | 115 | 110 | 110 | 110 | 100 | 85 | 65 |

Note: These are calculated figures and should be adjusted to the nearest manufactures thicknesses

Nm: Not Manufactured

*Laid between battens at 600 centres

SUSPENDED BEAM & BLOCK GROUND FLOOR (BLOCK K-VALUE 0.18 W/MK)U-Value achieved maximum 0.22W/m²K

| Required thickness of insulation (mm) | | | | | | | | | | | |
|---|---------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Product | λ-value | Perimeter/Area Ratio | | | | | | | | | |
| | | 1.0 | 0.9 | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 |
| Kingspan Kooltherm K3 | 0.020 – 0.023 | 65 | 65 | 65 | 60 | 60 | 55 | 55 | 50 | 40 | 20 |
| Celotex GA4000 | 0.022 | 75 | 75 | 70 | 70 | 65 | 65 | 65 | 55 | 40 | 12 |
| Xtratherm Thin-R | 0.022 | 75 | 75 | 70 | 70 | 65 | 65 | 65 | 55 | 40 | 20 |
| Kingspan TF70 | 0.022 | 70 | 70 | 70 | 65 | 65 | 60 | 60 | 50 | 40 | 20 |
| QUINN-therm QF | 0.022 | 70 | 70 | 70 | 65 | 65 | 60 | 60 | 50 | 40 | 25 |
| Recticel Eurothane GP | 0.022 | 70 | 70 | 70 | 65 | 65 | 60 | 60 | 50 | 40 | 25 |
| Knauf Insulation Polyfoam Floorboard Standard | 0.029 | 90 | 90 | 90 | 85 | 85 | 80 | 75 | 65 | 50 | 25 |
| Jablite Jabfloor Premium | 0.030 | 95 | 95 | 95 | 90 | 90 | 85 | 80 | 70 | 55 | 25 |
| Styrofoam Floormate 300A | 0.035 | 100 | 100 | 100 | 100 | 90 | 90 | 90 | 80 | 60 | 50 |
| Rockwool Rockfloor | 0.038 | 130 | 125 | 125 | 125 | 120 | 110 | 100 | 90 | 70 | 25 |

GROUND BEARING SLABU-Value achieved maximum 0.22W/m²K

| Required thickness of insulation (mm) | | | | | | | | | | | |
|---|---|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Product | λ-value | Perimeter/Area Ratio | | | | | | | | | |
| | | 1.0 | 0.9 | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 |
| Kingspan Kooltherm K3 | 0.020 – 0.023 | 75 | 70 | 70 | 65 | 65 | 60 | 55 | 45 | 30 | 20 |
| Celotex GA4000 | 0.022 | 80 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 30 | 12 |
| Kingspan TF70 | 0.022 | 80 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 30 | 20 |
| Xtratherm Thin – R | 0.022 | 80 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 30 | 25 |
| QUINN-therm QF | 0.022 | 80 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 30 | 25 |
| Recticel Eurothane GP | 0.022 | 80 | 75 | 75 | 70 | 70 | 65 | 60 | 50 | 30 | 25 |
| Knauf Insulation Polyfoam Floorboard Standard | 0.029 | 100 | 100 | 100 | 100 | 90 | 85 | 75 | 65 | 65 | 50 |
| Jablite Jabfloor Premium | 0.030 | 105 | 105 | 100 | 95 | 95 | 95 | 80 | 65 | 50 | 20 |
| Sytrofoam Floormate 300A | 0.035 | 110 | 100 | 100 | 100 | 90 | 90 | 80 | 70 | 50 | 50 |
| Rockwool Rockfloor | 0.038 (50mm – 100mm) 0.040 (25mm – 40mm) | 130 | 130 | 125 | 120 | 120 | 110 | 100 | 80 | 50 | 50 |

CAVITY WALL - TIMBER FRAME 150 & 100x50mm studs at 600 & 400mm centres
 U-Value achieved maximum 0.28W/m²K. Wall heights up to max 10M.

| Outer Leaf | | Cavity | | Inner Leaf | | Internal Finish | |
|------------|--|--------|--------------|------------|--|-----------------|----------------|
| mm | | mm | | mm | | mm | |
| 105 | Brick | 50 | Clear Cavity | 140 | Knauf Insulation Earthwool FrameTherm 38 (150mm Studs) | 12.5 | P/board & skim |
| 105 | Brick | 50 | Clear Cavity | 70 | Kingspan Kooltherm K12 Framing board between 150mm studs | 12.5 | P/board & skim |
| 105 | Brick | 50 | Clear Cavity | 80 | Kingspan Kooltherm K12 Framing board between 100mm studs | 12.5 | P/board & skim |
| 100 | Dense Block K value of 1.13 or lower & Render Finish | 50 | Clear Cavity | 70 | Kingspan Kooltherm K12 Framing board between 150mm studs | 12.5 | P/board & skim |
| 100 | Dense Block K value of 1.13 or lower & Render Finish | 50 | Clear Cavity | 80 | Kingspan Kooltherm K12 Framing board between 100mm studs | 12.5 | P/board & skim |
| 105 | Brick | 50 | Clear Cavity | 75 | Kingspan Thermawall TW55 between 150mm studs | 32.5 | P/board & skim |
| 105 | Brick | 50 | Clear Cavity | 90 | Kingspan Thermawall TW55 between 100mm studs | 12.5 | P/board & skim |
| 100 | Dense Block K value of 1.13 or lower & Render Finish | 50 | Clear Cavity | 75 | Kingspan TW55 between 150mm studs | 12.5 | P/board & skim |
| 100 | Dense Block K value of 1.13 or lower & Render Finish | 50 | Clear Cavity | 90 | Kingspan TW55 between 100mm studs | 12.5 | P/board & skim |
| 105 | Brick | 50 | Clear Cavity | 75 | Eurothane GP between 150mm studs | 32.5 | P/board & skim |
| 105 | Brick | 50 | Clear Cavity | 90 | Eurothane GP between 100mm studs | 32.5 | P/board & skim |
| 100 | Dense Block K value of 1.13 or lower & Render Finish | 50 | Clear Cavity | 75 | Eurothane GP between 150mm studs | 12.5 | P/board & skim |
| 100 | Dense Block K value of 1.13 or lower & Render Finish | 50 | Clear Cavity | 90 | Eurothane GP between 100mm studs | 12.5 | P/board & skim |
| 105 | Brick | 50 | Clear Cavity | 140 | Rockwool Flexi | 12.5 | P/board & skim |
| 105 | Brick | 50 | Clear Cavity | 75 | Celotex FR4000 between 150mm studs | 32.5 | P/board & skim |
| 105 | Brick | 50 | Clear Cavity | 90 | Celotex FR4000 between 100mm studs | 32.5 | P/board & skim |
| 100 | Dense Block K value of 1.13 or lower & Render Finish | 50 | Clear Cavity | 75 | Celotex FR4000 between 150mm studs | 12.5 | P/board & skim |
| 100 | Dense Block K value of 1.13 or lower & Render Finish | 50 | Clear Cavity | 90 | Celotex FR4000 between 100mm studs | 12.5 | P/board & skim |

TIMBER FRAME WALLU-Value achieved maximum 0.28W/m²K

| External finish | 100 x 50 Stud Wall | | Internal Finish | |
|--------------------------------------|--------------------|--|-----------------|---|
| | mm | | mm | |
| Tiles, render or cladding on battens | 50 | Kingspan Kooltherm K12 | 32.5 | Kingspan Kooltherm K18 |
| Tiles, render or cladding on battens | 50 | Kingspan Thermawall TW55 | 32.5 | Kingspan Kooltherm K18 |
| Tiles, render or cladding on battens | 60 | Celotex FR4000 between studs | 37.5 | Celotex PL4000 with lightweight skim |
| Tiles, render or cladding on battens | 60 | Eurothane GP between studs | 37.5 | Eurothane PL with lightweight skim |
| Tiles & battens / render | 100 | Knauf Insulation Earthwool Flexible Slab | 35 | Knauf Insulation Polyfoam Linerboard or Knauf Thermal Laminate Plus |

TIMBER FRAME WALLU-Value achieved maximum 0.28W/m²K

| External finish | 125 x 50 Stud Wall | | Internal Finish | |
|--------------------------------------|--------------------|--|-----------------|---|
| | mm | | mm | |
| Tiles, render or cladding on battens | 85 | Kingspan Kooltherm K12 | 12.5 | P/board & skim |
| Tiles, render or cladding on battens | 90 | Kingspan Thermawall TW55 | 12.5 | P/board & skim |
| Tiles, render or cladding on battens | 90 | Celotex FR4000 between studs | 12.5 | P/board & skim |
| Tiles, render or cladding on battens | 90 | Eurothane GP between studs | 12.5 | P/board & skim |
| Tiles & battens / render | 100 | Knauf Insulation Earthwool Flexible Slab | 35 | Knauf Insulation Polyfoam Linerboard or Knauf Thermal Laminate Plus |

TYPICAL SOLID WALL CONSTRUCTION
U-Value achieved minimum 0.28W/m²K

| External mm | | Block Type mm | | Internal Finish mm | |
|----------------|--------|------------------|--|-----------------------|---|
| 20 | Render | 215 | Celcon Solar λ (0.11) | 50 | Gyproc Thermaline Super |
| 20 | Render | 215 | Topblock Toplite Standard, Celcon Standard λ (0.15) | 60 | Gyproc Thermaline Super |
| 20 | Render | 215 | Durox Supablock, Topblock GTI, Thermalite Turbo λ (0.11) | 42.5 | Kooltherm K18 dry-lining board mechanically fixed to timber battens |
| 20 | Render | 215 | Block λ (0.32) i.e. Plasmor Aglite | 62.5 | Kooltherm K18 dry-lining board mechanically fixed to timber battens |
| 20 | Render | 215 | Lightweight Block λ (0.11) | 50 | Knauf Phenolic Laminate board |
| 20 | Render | 215 | Lightweight Block λ (0.11 – 0.15) | 75 | Knauf Insulation IWI System |
| 20 | Render | 215 | Celcon Solar λ (0.11) | 52.5 | Celotex PL4000 |
| 20 | Render | 215 | 215 Block λ (0.15) i.e. Tarmac topblock standard | 57.5 | Celotex PL 4000 |
| 20 | Render | 215 | Block λ (0.32) i.e. Plasmor Aglite | 67.5 | Celotex PL 4000 |
| 20 | Render | 215 | Celcon Solar λ (0.11) | 52.5 | Recticel PL |
| 20 | Render | 215 | 215 Block λ (0.15) i.e. Tarmac topblock standard | 57.5 | Recticel PL |
| 20 | Render | 215 | Block λ (0.32) i.e. Plasmor Aglite | 67.5 | Recticel PL |

DRY LINING TO EXISTING SOLID WALLU-Value achieved maximum 0.30W/m²K

| Existing wall mm | Dry lining product mm | | Internal Finish mm | |
|---|---------------------------------|--|------------------------------|-----------|
| 215 Brick | 62.5 | Kingspan Kooltherm K18 insulated dry lining board fixed to 25 x 50mm battens | 5 | Skim coat |
| 215 Brick or Dense Block (λ 1.13 or lower) & Render | 62.5 | Kingspan Kooltherm K18 insulated dry lining board fixed to 25 x 50mm battens | 5 | Skim coat |
| 215 Brick | 90 | Knauf Insulation IWI System | 5 | Skim coat |
| 215 Brick | 72.5 | Celotex PL4000 | 5 | Skim coat |
| 215 Brick or Dense Block (λ 1.13 or lower) & Render | 72.5 | Celotex PL4000 | 5 | Skim coat |
| 102.5 Brick | 77.5 | Celotex PL4000 | 5 | Skim coat |
| 215 Brick | 72.5 | Eurothane PL | 5 | Skim coat |
| 215 Brick or Dense Block (λ 1.13 or lower) & Render | 72.5 | Eurothane PL | 5 | Skim coat |
| 102.5 Brick | 77.5 | Eurothane PL | 5 | Skim coat |

FULL FILL CAVITY WALL – BLOCK INNER LEAF and BRICK OUTER LEAF

U-Value achieved maximum 0.28W/m²K

| Outer Leaf | | Full Fill Cavity* | | Inner Leaf | | Internal finish | |
|------------|-------|-------------------|---|------------|--|-----------------|---|
| mm | | mm | | mm | | mm | |
| 102.5 | Brick | 85 | Earthwool DriTherm 32 Ultimate | 100 | Block λ value of 0.15 or lower e.g. Celcon Standard/ Toplite Standard | 12.50 | Plasterboard on dabs |
| 102.5 | Brick | 85 | Earthwool DriTherm 34 Super | 100 | Block λ value of 0.15 or lower e.g. Celcon Solar/ Thermalite Turbo/ Durox Supablock | 13 | Plasterboard on dabs |
| 102.5 | Brick | 100 | Earthwool DriTherm 37 Standard or Earthwool DriTherm Cavity Slab (Rock) | 100 | Block λ value of 0.11 or lower, e.g. Celcon Solar/ Thermalite Turbo/ Durox Supablock | 12.5 | Plasterboard on dabs |
| 102.5 | Brick | 100 | Rockwool Cavity/ | 100 | Block λ value of 0.11 or lower e.g. Celcon Solar/ Thermalite Turbo/ Durox Supablock | 13 | Lightweight plaster |
| 102.5 | Brick | 100 | Earthwool DriTherm 34 Super | 100 | Block λ value of 0.32 or lower e.g. Plasmor Aglite or Fibolite. | 12.50 | Plasterboard on dabs |
| 102.5 | Brick | 100 | Earthwool DriTherm 32 Ultimate | 100 | Block λ value of 1.13 or lower, e.g. RMC Readyblock Dense | 12.5 | Plasterboard on dabs |
| 102.5 | Brick | 100 | Earthwool DriTherm 37 Standard | 100 | Block λ value of 0.51 or lower, e.g. Masterblock GPI | 25 | Knauf Insulation Polyfoam Linerboard/ Knauf Thermal Laminate Plus |
| 102.5 | Brick | 100 | Earthwool DriTherm 32 Ultimate | 100 | Block λ value of 0.11 or lower, e.g. Celcon Solar/ Thermalite Turbo/ Durox Supablock | 13 | Plasterboard on dabs or Dense or lightweight plaster |

FULL FILL CAVITY WALL – BLOCK INNER LEAF AND BLOCK OUTER LEAF

U-Value achieved maximum 0.28W/m²K

| Outer Leaf | | Full Fill Cavity* | | Inner Leaf | | Internal finish | |
|------------|--|-------------------|---|------------|---|-----------------|------------------------------|
| mm | | mm | | mm | | mm | |
| 100 | Rendered Block λ value of 0.11 or lower, e.g. Celcon Solar/ Thermalite Turbo/ Durox Supablock | 65 | Earthwool DriTherm 32 Ultimate | 100 | Block λ value of 0.11 or lower, e.g. Celcon Solar / Thermalite Turbo / Durox Supablock | 13 | Lightweight plaster |
| 100 | Rendered Block λ value of 0.15 or lower e.g. Celcon Standard/ Toplite Standard | 75 | Earthwool DriTherm 32 Ultimate | 100 | Block λ value of 0.15 or lower, e.g. Celcon Standard / Toplite Standard | 13 | Dense or lightweight plaster |
| 100 | Rendered Block λ value of 0.15 or lower, e.g. Celcon Standard/ Toplite Standard | 75 | Earthwool DriTherm 37 Standard or Earthwool Cavity Slab (Rock) | 100 | Block λ value of 0.11 or lower, e.g. Celcon Solar / Thermalite Turbo / Durox Supablock | 13 | Lightweight plaster |
| 100 | Rendered Block λ value of 0.15 or lower, e.g. Celcon Standard/ Toplite Standard | 80 | Rockwool Cavity | 100 | Block λ value of 0.11 or lower, e.g. Celcon Solar / Thermalite Turbo / Durox Supablock | 13 | Lightweight plaster |
| 100 | Rendered Block λ value of 0.15 or lower, e.g. Celcon Standard/ Toplite Standard | 85 | Earthwool DriTherm 37 Standard | 100 | Block λ value of 0.15 or lower, e.g. Celcon Standard / Toplite Standard | 13 | Lightweight plaster |
| 100 | Rendered Aglite Block 7.3N λ value of 0.32 | 100 | Earthwool DriTherm 34 Super or Isover C.W.S. | 100 | Ag-lite Block 7.3N λ value of 0.32 | 13 | Lightweight plaster |
| 100 | Rendered Block 1500kg/m ³ Dense Block | 100 | Earthwool DriTherm 37 Standard | 100 | Block λ value of 0.15 or lower, e.g. Celcon Standard / Toplite Standard | 13 | Lightweight plaster |

PARTIAL FILL CAVITY WALL – BLOCK INNER LEAF AND BRICK OUTER LEAF

U-Value achieved maximum 0.28W/m²K

| Outer Leaf mm | | * mm | Partial Fill Cavity | mm | Inner Leaf | Internal finish mm | |
|------------------|-------|---------|-------------------------------|-----|--|-----------------------|------------------------|
| 102.5 | Brick | 90 | 40mm Kingspan Kooltherm K8 | 100 | Block λ value of 0.14 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 95 | 45mm Kingspan Kooltherm K8 | 100 | Block λ value of 0.39 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 100 | 50mm Kingspan Kooltherm K8 | 100 | Block λ value of 1.13 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 90 | 40mm Kingspan Thermawall TW50 | 100 | Block λ value of 0.12 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 95 | 45mm Kingspan Thermawall TW50 | 100 | Block λ value of 0.19 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 100 | 50mm Kingspan Thermawall TW50 | 100 | Block λ value of 0.42 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 105 | 55mm Kingspan Thermawall TW50 | 100 | Block λ value of 1.13 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 90 | 40mm Celotex CW4000 | 100 | Block λ value of 0.12 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 95 | 45mm Celotex CW4000 | 100 | Block λ value of 0.19 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 100 | 50mm Celotex CW4000 | 100 | Block λ value of 0.42 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 105 | 55mm Celotex CW4000 | 100 | Block λ value of 1.13 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 90 | 40mm Recticel Eurowall | 100 | Block λ value of 0.12 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 95 | 45mm Recticel Eurowall | 100 | Block λ value of 0.19 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 100 | 50mm Recticel Eurowall | 100 | Block λ value of 0.42 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 105 | 55mm Recticel Eurowall | 100 | Block λ value of 1.13 or lower | 13 | Lightweight plaster |
| 102.5 | Brick | 85 | 35mm Kingspan Kooltherm K8 | 100 | Block λ value of 0.11 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 90 | 40mm Kingspan Kooltherm K8 | 100 | Block λ value of 0.19 or lower | 13 | P/Board on dabs & skim |

| | | | | | | | |
|-------|-------|-----|-------------------------------|-----|--|----|------------------------|
| 102.5 | Brick | 95 | 45mm Kingspan Kooltherm K8 | 100 | Block λ value of 0.90 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 100 | 50mm Kingspan Kooltherm K8 | 100 | Block λ value of 1.13 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 90 | 40mm Kingspan Thermawall TW50 | 100 | Block λ value of 0.15 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 95 | 45mm Kingspan Thermawall TW50 | 100 | Block λ value of 0.28 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 100 | 50mm Kingspan Thermawall TW50 | 100 | Block λ value of 1.13 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 90 | 40mm Celotex CW4000 | 100 | Block λ value of 0.15 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 95 | 45mm Celotex CW4000 | 100 | Block λ value of 0.28 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 100 | 50mm Celotex CW4000 | 100 | Block λ value of 1.13 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 90 | 40mm Recticel Eurowall | 100 | Block λ value of 0.15 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 95 | 45mm Recticel Eurowall | 100 | Block λ value of 0.28 or lower | 13 | P/Board on dabs & skim |
| 102.5 | Brick | 100 | 50mm Recticel Eurowall | 100 | Block λ value of 1.13 or lower | 13 | P/Board on dabs & skim |

*Some products can be used with reduced residual cavity width – a good level of workmanship is essential.
Please check with individual manufacturer.*

PARTIAL FILL CAVITY WALL – BLOCK INNER LEAF AND BLOCK OUTER LEAF

U-Value achieved maximum 0.28W/m²K

| Outer Leaf | | Partial Fill Cavity | | Inner Leaf | | Internal finish | |
|------------|---|---------------------------|--|------------|--|-----------------|------------------------------|
| Mm | | mm | | mm | | mm | |
| 100 | Block (1.13 or lower) + Render | 90 | 40mm Kingspan Kooltherm K8 or 40mm Kingspan Thermawall TW50 or 40mm Celotex CW4000 or 40mm Recticel Eurowall | 100 | Block λ value of 0.11 e.g. Celcon Solar / Thermalite Turbo | 13 | Dense or lightweight plaster |
| 100 | Rendered Block (λ 0.15 or lower) | 85 | 35mm Kingspan Kooltherm K8 or 35mm Kingspan Thermawall TW50 or 35mm Celotex CW4000 or 35mm Recticel Eurowall or 60mm Knauf Insulation Polyfoam Cavityboard | 100 | Block λ value of 0.15 or lower, e.g. Thermalite Shield. | 13 | Lightweight plaster |
| 100 | Rendered Dense Block (1.13 or lower) | 100 105 105 | 50mm Kingspan Kooltherm K8 or 55mm Celotex CW4000 or 55mm Recticel Eurowall | 100 | Dense Block λ value of 1.13 or lower e.g. Monacrete 100S / Plasmor Plascon | 15 | Plasterboard on dabs |

Some products can be used with reduced residual cavity width – a good level of workmanship is essential. Please check with individual manufacturer.

HERTS TECHNICAL FORUM TECHNICAL NOTE 10
BLOCK TECHNICAL DATA
Compliance with Approved Document L1B 2010

| Block Manufacturer | Block type | Strength (N) | Density (kg/m ³) | λ Value (W/mK) |
|--------------------|----------------|------------------|------------------------------|----------------|
| Armstrong | Light weight | 3.6 | 1350 | 0.42 |
| | Dense | 7.3 | 1950 | 1.13 |
| Besblock | Insulite Solid | 7 | 1457 | 0.47 |
| Celcon | Solar | 2.9 / 3.5 | 460 | 0.11 |
| | Standard | 3.6 | 600 | 0.15 |
| | Hi Strength 7 | 3 | 750 | 0.19 |
| Durox | Supablock 400 | 2.8 | 420 | 0.10 |
| | Supablock | 3.6 | 460 | 0.11 |
| | Supablock 4 | 4.2 | 630 | 0.16 |
| | Supablock 7 | 7.3 | 680 | 0.19 |
| Forticrete | Newlight | | | 0.43 |
| Hanson | Ultralite | 3.6 | 850 | 0.30 |
| | Superlite | 3.6 / 7.3 | 1000 | 0.36 |
| | Fenlight | 3.6 – 15 | 1500 | 0.48 |
| | Evalast | 3.6 – 22.5 | 1900 | 1.31 |
| Interfuse | Optilyte | | | 0.20 |
| | Interyte | | | 0.47 |
| | Intercrete | | | 1.13 |
| Lignacite | SP | 3.6 / 7.3 / 10.4 | 1450 | 0.79 |
| | Standard | 3.6 / 7.3 / 10.4 | 1570 | 0.97 |
| Masterblock | Pumalite | | | 0.44 |
| | Lightweight | | | 0.59 |
| | Dense | | | 1.06 |
| | Fibotherm | 3.5 | | 0.25 |
| | Monalight 100S | | | 0.5 |
| | Monacrete 100 | | | 0.59 |
| | GPI | | | 0.51 |
| | Monacrete 100S | | | 1.13 |
| Plasmor | Fibolite | 3.6 | 850 | 0.25 |
| | | 7.3 | 950 | 0.28 |
| | Aglite | 4.2 | 1050 | 0.32 |
| | | 7.3 | 1050 | 0.32 |
| | | 10.4 | 1150 | 0.32 |
| | Stranlite | 4.2 | 1375 | 0.46 |
| | | 7.3 | 1375 | 0.46 |
| | | 10.4 | 1425 | 0.46 |
| | Plascon | 7.3 / 10.4 | 1950 | 1.06 |

HERTS TECHNICAL FORUM TECHNICAL NOTE 10
BLOCK TECHNICAL DATA CONTINUED
Compliance with Approved Document L1B 2010

| Block Manufacturer | Block type | Strength (N) | Density (kg/m ³) | λ Value (W/mK) | |
|---------------------|--------------------|------------------|------------------------------|----------------|------|
| RMC | Readybock 1100 | | | 0.34 | |
| | Readyblock 1400 | | | 0.59 | |
| | Readyblock Dense | | | 1.13 | |
| Stock Blocks | Ultralite | | | 0.25 | |
| | Insulite | | | 0.40 | |
| | Lyta | | | 0.56 | |
| | Dense Concrete | | | 0.99 – 1.25 | |
| Thermalite | Turbo | 2.9 | 470 | 0.11 | |
| | Shield | 3.6 | 600 | 0.15 | |
| | Hi Strength | 7.3 | 730 | 0.19 | |
| Topblock | Supabloc | | | 0.11 | |
| | Supabloc 4 | | | 0.16 | |
| | Supabloc 7 | | | 0.19 | |
| | Hemelite | | 3.6 | 1360 | 0.45 |
| | | | 7.3 | 1450 | 0.47 |
| | | | 10.4 | 1480 | 0.49 |
| | | Toplite GTI | 2.9 | 460 | 0.11 |
| | | Toplite Standard | 3.6 | 630 | 0.15 |
| | | Toplite 7 | 7.3 | 720 | 0.19 |
| | Topcrete Fair Face | | | 0.99 | |
| | Topcrete Dense | | | 1.28 | |

HERTS TECHNICAL FORUM TECHNICAL NOTE 10
EXAMPLES OF PITCHED ROOF INSULATION

Compliance Approved Document L1B 2010

VENTED COLD DECK PITCHED ROOF - INSULATION BETWEEN RAFTERS

U-Value achieved maximum 0.18W/m²K

| Product | λ-Value | Solution/mm |
|---|---|--|
| Kingspan Kooltherm K7 with K18 Insulated Dry-lining Board | 0.020 – 0.023 | 100mm K7 between rafters & 42.5mm K18 under rafters |
| Kingspan Thermapitch TP10 with K18 Insulated Dry-lining Board | 0.022 & 0.020–0.023 | 120mm TP10 between rafters & 32.5mm K18 under rafters |
| Kingspan Kooltherm K7 with K18 Insulated Dry-lining Board | 0.020 – 0.023 | 100mm K7 between rafters & 37.5mm K18 under rafters* |
| Kingspan Thermapitch TP10 with K18 Insulated Dry-lining Board | 0.022 & 0.020–0.023 | 100mm TP10 between rafters & 37.5mm K18 under rafters* |
| Celotex GA4000 between or between and under rafters | 0.022 | 165mm between rafters * or 100mm between rafters & 35mm under rafters* or 50mm between rafters & 70mm under rafters, with plasterboard attached to 25mm deep counter battens to create air space* |
| Recticel Eurothane GP between rafters | 0.022 | 165mm Recticel Eurothane GP between rafters* |
| Recticel Eurothane GP between rafters & Eurothane PL under | 0.022 0.022 + 0.017 | 100mm Recticel Eurothane GP between rafters & 42.5mm Eurothane PL* |
| Recticel Eurothane GP between rafters & Eurothane PL under | 0.022 0.022 + 0.017 | 50mm between rafters & 70mm under rafters, with plasterboard attached to 25mm deep counter battens to create air space then 12.5mm plasterboard and skim* |
| Rockwool Flexi | 0.038 | 240mm between rafters |
| Knauf Insulation Earthwool Rafter Roll and 55mm Polyfoam Linerboard | 0.032/0.030 | 140mm between rafters, underlined with 55m Polyfoam Linerboard or Knauf Thermal Laminate Plus |
| Web Dynamics TLX Silver FB and Insulation with K value of 0.022 or better | (R-value 1.69) 0.022 | One layer under rafters with plasterboard attached to 25mm deep counter battens to create air space <u>and</u> 75mm foiled rigid insulation such as Kingspan or Celotex or Recticel Eurothane GP between rafters* |
| YBS SuperQuilt and Insulation with K value of 0.023 or better | (R value of 2.71 including both airspaces) 0.023 | One layer under rafters with plasterboard attached to 25mm deep battens to create air space <u>and</u> 65mm foil face rigid insulation such as Kingspan or Celotex or Recticel Eurothane GP between rafters with a 25mm cavity between the multifoil and the rigid insulation. |
| * All unvented roofs using vapour permeable underlay. All specifications assume rafters at 400mm c/c and plaster skimmed 12.5 plasterboard ceiling | | |

VENTED COLD DECK PITCHED ROOF - INSULATION BETWEEN & OVER CEILING JOISTSU-Value achieved maximum 0.16W/m²K

| Product | λ-Value | Solution/mm |
|---|----------------|---|
| Earthwool Loft Roll 44 | 0.044 | 100mm between joists and 170mm over joists |
| Rockwool Roll | 0.044 | 100mm between & 170mm over |
| Earthwool Loft Roll 44 and Polyfoam Space Board | 0.044 0.029 | 100mm Earthwool Loft Roll 44 between joists and 2 layers of 52.50mm Space Board over joists and overlaid with 18mm chipboard |

WARM DECK PITCHED ROOF – INSULATION ABOVE THE RAFTERSU-Value achieved 0.18W/m²K

| Product | λ-Value | Solution/mm |
|---|---------------|--|
| Polyfoam Sarking Board and Polyfoam Raftersqueeze | 0.030 | 50mm over rafters with 125mm between rafters |
| Kingspan Kooltherm K7 | 0.020 -0.023 | 100mm over rafters with breathable membrane, for example Kingspan Nilvent beneath counter battens* |
| Kingspan Kooltherm K7 | 0.020 -0.023 | 90mm over rafters with breathable membrane, for example Kingspan Nilvent above counter battens* |
| Kingspan Kooltherm K7 | 0.020 -0.023 | 50mm between and 55mm over rafters with breathable membrane, for example Kingspan Nilvent beneath counter battens* |
| Kingspan Kooltherm K7 | 0.020 -0.023 | 50mm between and 50mm over rafters with breathable membrane, for example Kingspan Nilvent above counter battens* |
| Kingspan Thermapitch TP10 | 0.022 | 110mm over rafters with breathable membrane, for example Kingspan Nilvent beneath counter battens* |
| Kingspan Thermapitch TP10 | 0.022 | 100mm over rafters with breathable membrane, for example Kingspan Nilvent above counter battens* |
| Celotex GA4000 | 0.022 | 100mm over rafters with breathable membrane* |
| Celotex GA4000 | 0.022 | 60mm between and 60mm over rafters * |
| Recticel Eurothane GP | 0.022 | 60mm between and 60mm over rafters * |
| Recticel Eurothane GP | 0.022 | 100mm over rafters with breathable membrane* |
| Rockwool Overlay System | 0.035 & 0.038 | 140mm Flexi between and 70mm Overlay over rafters |

* All unvented roofs using vapour permeable underlay.

All specifications assume rafters at 400mm c/c and plaster skimmed 12.5 plasterboard ceiling

**HERTS TECHNICAL FORUM TECHNICAL NOTE 10 -
EXAMPLES OF FLAT ROOF INSULATION**

Compliance with Approved Document L1B – 2010 Edition

COLD DECK FLAT ROOF – INSULATION BETWEEN AND BETWEEN / UNDER JOISTS

U-Value achieved minimum 0.18W/m²K

| Product | λ-Value | Notes | Solution - o/all thickness in mm |
|--|-----------------------|---|---|
| Jablite Premium Board | 0.030 | Based on timber roof with 50mm wide joists at 400mm centres | 220 between joists or 150 between joists and 50 under |
| Knauf Insulation Earthwool Universal Slab RS45 Polyfoam Linerboard | 0.035 and 0.030 | Based on timber roof with 50mm wide joists at 400mm centres | 160mm between joists and 55mm Polyfoam Linerboard or Knauf Thermal Laminate Plus under |
| Xtratherm Thin - R | 0.022 | Based on timber roof with 50mm wide joists at 400mm centres | 185mm between joists or 125mm between and 25mm under |
| Ecotherm | 0.022 | Based on timber roof with 50mm wide joists at 400mm centres | 185mm between joists or 125mm between and 25mm under |
| Quintherm | 0.022 | Based on timber roof with 50mm wide joists at 400mm centres | 185mm between joists or 125mm between and 25mm under |
| Recticel Eurothane GP | 0.022 | Based on timber roof with 50mm wide joists at 400mm centres | 185mm between joists or 125mm between and 25mm under |
| Recticel Eurothane GP & Eurothane PL | 0.022 | Based on timber roof with 50mm wide joists at 400mm centres | 120mm between joists and 37.5mm Eurothane PL under joists. |
| Kingspan Kooltherm K7 & K18 | 0.020 - 0.023 | Based on timber roof with 50mm wide joists at 400mm centres | 175mm (100+75mm) Kooltherm K7 between joists, or 100mm Kooltherm K7 between joists & 42.5mm Kooltherm K18 beneath |
| Kingspan Thermapitch TP10 & Kooltherm K18 | 0.022 & 0.022 – 0.023 | Based on timber roof with 50mm wide joists at 400mm centres | 185mm (105+80mm) Thermapitch TP10 between joists, or 120mm TP10 between joists & 37.5mm K18 beneath |
| Celotex XR 4000 | 0.022 | Based on timber roof with 50mm wide joists at 400mm centres | 185mm between joists or 125mm between and 25mm under |
| Celotex XR4000 and PL4000 Under-layer | 0.022 | Based on timber roof with 50mm wide joists at 400mm centres | 120mm XR4000 between joists and 37.5mm PL4000 under joists. |

WARM DECK FLAT ROOF – INSULATION ABOVE JOISTS OR ABOVE AND BETWEEN JOISTS

U-Value achieved maximum 0.18W/m²K

NB – Where composite deck insulation is to be used with a Single Ply Membrane – ensure the conditions of use of the membrane are met. It may be necessary to use an additional layer of 12mm Ply above the insulation to meet the conditions of use.

| Product | λ-Value | Notes | Solution |
|---|---------------|---|---|
| Celotex TD4000 | 0.022 | Mechanical Fix <i>Single Ply Membrane or Built up felt. (12mm additional ply required for single ply membrane)</i> | 126mm Celotex TD4000 |
| Celotex XR4000 | 0.022 | Balconies – Weatherproof layer on 19mm ply, on Celotex, on 1000g polythene on 19mm Ply on Joists. | 120mm Celotex XR4000 |
| Recticel Plylok (composite deck) | 0.022 | Mechanical Fix <i>Single Ply Membrane or Built up felt. (12mm additional ply required for single ply membrane)</i> | 126mm Recticel Plylok |
| Recticel Eurodeck | 0.022 | For use with mechanically fixed single ply membranes | 110mm (Using thermally broken fasteners) |
| Recticel Eurothane Silver BBA/LPC/FM | 0.023 | For use with mechanically fixed single ply membranes and approved liquid applied systems. | 120mm (Using thermally broken fasteners) |
| Recticel Powerdeck F LPC/FM | 0.024 – 0.026 | Use with bonded or mechanically fixed to substrate - finish with 3 layer partially bonded built up felt, mastic asphalt or single ply membrane | 120mm |
| Recticel Powerdeck B | 0.024 – 0.026 | Use with torch on bituminous waterproofing systems | 120mm |
| Kingspan Thermo roof TR31 (composite deck) | 0.022 | For use with 3 layer Built up felt. 2 Layer felt or heat bonded mastic asphalt to be used with 13mm fibre board. | 126mm Kingspan TR31 or 96 plus 30mm of TP10 between joists. |
| Kingspan Thermo roof TR26 LPC/FM | 0.022 | For use with mechanically fixed single ply membranes | 110mm (Using Telescopic tube fixings) |
| Kingspan Thermo roof TR27 LPC/FM | 0.024 - 0.026 | Use with bonded or mechanically fixed to substrate - finish with 3 layer partially bonded built up felt, mastic asphalt or single ply membrane and approved liquid applied systems. | 120mm |
| Knauf Insulation Polyfoam Roofboard Standard | 0.029 | (Single Ply membranes only) Timber deck, with a 12.5mm plasterboard ceiling. | 150mm |
| Knauf Insulation RocksilK Krimpact Flat Roof Slab | 0.038 | Use with bonded fixing over a plywood deck – finish with 3 layer built up felt, mastic asphalt or single ply membrane | 185mm |
| Jablite Jabdec | 0.035 | Ditto | 183mm (with mech fixing) 163mm (without) |
| Rockwool Duorock | 0.038 | Available plain, tissue faced or SPA for mechanical or adhered membranes | 190mm |

HERTS TECHNICAL FORUM TECHNICAL NOTE 10
INSULATION TECHNICAL DATA
Compliance with Approved Document L1B 2010

| Company | Product | λ -Value W/mK | Available Thickness (mm) | Use |
|--|---|--------------------------|--|------------------------|
| Knauf Insulation | Earthwool DriTherm Cavity Slab 37 Standard | 0.035 0.037 | 50, 65, 75, 85, 100, 125, 150 | Cavity wall |
| | Earthwool DriTherm Cavity Slab 34 Super | 0.034 | 65, 75, 85, 100, 125, 150 | Cavity wall |
| | Earthwool DriTherm Cavity Slab 32 Ultimate | 0.032 | 50, 65, 75, 85, 100, 125 | Cavity wall |
| | Earthwool FrameTherm 32 | 0.032 | 90, 140 roll and slab | Timber frame, |
| | Earthwool FrameTherm 35 | 0.035 | 90, 140 roll and slab | Timber frame |
| | Earthwool FrameTherm 38 | 0.038 | 90, 140 slab | Timber frame |
| | Earthwool FrameTherm 40 | 0.040 | 90, 140 roll | Timber frame |
| | Earthwool Universal Slab RS45 | 0.035 | 30, 40, 50, 60, 75, 100 | Walls, roof, floors |
| | Earthwool Flexible Slab | 0.035 and 0.037 | 50, 60, 70, 90, 100, 140 | Walls, roof, floors |
| | Internal Wall Insulation System | 0.032 and 0.035 | 60, 75, 90 incorporating EcoStud and EcoBatt | Walls |
| | Earthwool Loft Roll 40 | 0.040 | 100, 150, 170, 200 | Roofs |
| | Earthwool Loft Roll 44 | 0.044 | 100, 150, 170, 200 | Roofs |
| | Earthwool Rafter Roll | 0.032 and 0.036 | 50, 65, 75, 85, 100, 125, 140, 175, 200 | Rafters |
| Knauf Insulation Polyfoam | Cavityboard | 0.029 | 25, 30, 35, 40, 50, 60, 75 | Cavity wall |
| | Roofboard Standard | 0.029 | 35, 50, 60, 75 | Warm deck roof |
| | Sarkingboard | 0.030 | 75 | Over rafters |
| | Raftersqueeze | 0.030 | 50, 65, 75 | Inter rafter |
| | Floorboard Standard | 0.029 | 25, 35, 50, 65, 70, 100 | Floor |
| | Linerboard | 0.030 | 25, 35, 40, 45, 55 | Lining |
| | Space Board | 0.029 | 2 x 52.50 overlaid with 18mm chipboard | Loft decking |

| | | | | |
|-----------------|--|-------------------------|--|--------------------------------------|
| Celotex | TB4000 | 0.022 | 12,20,25,30,35,40,45 | Floors, walls, Roof |
| | GA4000 | 0.022 | 50,60,70,80,90,100 | Floors, walls, Roof |
| | XR4000 | 0.022 | 110,120,130,140,150,200 | Floors, walls, Roof |
| | CW4000 | 0.022 | 25,40,50,60,70,80,90,100 | Cavity walls |
| | FR4000 | 0.022 | 25,50,60,70,80,90,100,150 | Walls & pitched roof |
| | CG4000 | 0.022 | 40,50,60,70,74,80 | Cavity walls |
| | PL4000 | 0.022 | 25,40,55,65 | Thermal plasterboard |
| | FF4000 | 0.022 | 50,70,90,100,125,150 | Underfloor heating |
| | TD4000 | 0.022 | 70,80,90,100,120,150 | Flat roof |
| | EL3000 | 0.027 0.026 0.025 | 50 80, 90, 100, 110 120,140,150,165,200 | Flat roof |
| | TA4000 | 0.022 | 50,75,90,100,125,150,200 | Flat roof |
| | LG3000 | 0.023 | 25,30,40,50 | Lining |
| Rockwool | Flexi | 0.035*– 0.038 | 50,60,70,90,100,120,140* | Floors, Walls, Roof |
| | Rockwool Roll | 0.044 | 100,150, 170, 200 | Timber frame/floor |
| | Cavity wall batt | 0.037 | 50,80,100,110,130,150 | Cavity wall |
| | Rockfloor | 0.038* – 0.040 | 25*,30*,40*,50,60,70,80,90,100 | Concrete floor |
| | Rockwool Roll | 0.044 | 100,150,170,200 | Pitched roof, floor |
| | Duorock | 0.038 | 50,85,95,105,135,145,165,180 | Flat Roof |
| Recticel | Eurothane Eurowall (BBA) | 0.022 | 25,30,35,40,45,50,55,60,65,70,75,80,85,90,100 | Cavity Walls |
| | Eurothane GP (BBA) | 0.022 | 20,25,30,35,40,45,50,55,60,65,70,75,80,85,90,100,110,120,130,140,150 | Framed Walls, Floors & Pitched Roofs |
| | Eurothane PL | 0.022/0.17 | 25,40,45,50,55,65 – all +12.5mm Plasterboard | Thermal Laminate |
| | Powerdeck F LPS 1181 | 0.024– 0.026 | 25,30,40,45,50,60,70,75,80,85,90,100,110,120,130,140,150 | Adhesively Fixed Single Ply |
| | Powerdeck B | 0.024– 0.026 | 30,40,50,60,70,80,90,100,110,120,130,140,150 | |
| | Eurothane Eurodeck | 0.022 | 25,30,40,45,50,60,70,80,85,90,100,110,120,130,140,150 | Mechanically Fixed Single Ply |
| | Eurothane Silver LPS 1181 + (BBA) + FM | 0.023 | 25,30,40,45, 50,60, 70, 75, 80,85,90,100,110,120,130,140 | Liquid Applied Systems |
| | Eurothane Bi3 (BBA) | 0.027 | 30,40,50,60,70,75,80,90,100 | Flat Roofing |
| | Powerline | | | Lining |
| | Plylok | 0.022 | 56,76,81,86,96,106,116,126 Inc. 6mm Ply | Flat Roofing |

HERTS TECHNICAL FORUM TECHNICAL NOTE 10
INSULATION TECHNICAL DATA CONTINUED
Compliance with Approved Document L1B 2010

| Company | Product | λ -Value W/mK | Available Thickness (mm) | Use | |
|--------------------------------|-----------------------------|--|------------------------------|-------------------|--------------|
| Jablite | Jabfloor Premium | 0.030 | 25,40,50,75,100,150,200 | Floor | |
| | Jabfloor 70 | 0.038 | 25,40,50,75,100,150,200 | Floor | |
| | Jabwall & Jablok | 0.038 | 40,50,60,75 | Cavity wall | |
| | Jabwall Premium | 0.030 | 40,50,60,75 | Cavity wall | |
| | Jabfill Premium | 0.030 | 75,100 | Cavity wall | |
| | Jablite Board | 0.038 | 25,40,50,75,100,150,200 | Wall lining, roof | |
| | Jabroof Slim fix | 0.037 0.031 0.027 0.024 0.020 0.016 | 79 | | Pitched roof |
| | | | 97 | | |
| | | | 113 | | |
| | | | 131 | | |
| | | | 157 | | |
| | | | 195 | | |
| | Jabsqueeze | 0.038 | | | |
| | Jabdec | 0.036 | 33 -100 in 5mm increments | | Flat roof |
| 0.035 | | 100 + in 5mm increments | | | |
| Jabtherm | 0.036 | 20 -100 in 5mm increments | | Flat roof | |
| | 0.035 | 100 + in 5mm increments | | | |
| Jabroll | 0.036 | 50,65,95 | | Flat roof | |
| | 0.035 | 135 | | | |
| Kingspan Insulation Ltd | Kooltherm K7 | 0.020 – 0.022 | 25 – 140mm | Pitched Roof | |
| | Kooltherm K18 | 0.020 – 0.022 | 32.5 – 92.5mm | Dry lining | |
| | Kooltherm K8 | 0.020 – 0.022 | 40 -75mm | Cavity wall | |
| | Kooltherm K12 | 0.020 – 0.022 | 40 -120mm | Timber frame | |
| | Kooltherm K3 | 0.020 – 0.022 | 20 -100mm | Floor | |
| | Thermapitch TP10 | 0.022 | 20 -150mm | Pitched Roof | |
| | TherमारooF TR26 LPC / FM | 0.025 | 25 -150mm | Flat roof | |
| | TherमारooF TR27 LPC / FM | 0.022 | 25 -145mm | Flat Roof | |
| | TherमारooF TW50 | 0.022 | 25 -100mm | Cavity Wall | |
| | TherमारooF TW55 | 0.022 | 20 -150mm | Timber Frame Wall | |
| | TherमारooF TF70 | 0.022 | 20 – 150mm | Floor | |
| | TherमारooF TR31 | 0.022 | 56-126mm | Flat roof | |
| Dow Styrofoam | Floormate 200-X | 0.029 | 25,35,50,60,70,80,100,120 | Floors | |
| | Roofmate SL-X | 0.029 | 25,35,50,70,80,100,120 | Flat roof | |
| | | 0.031 | 130,140,150 | | |
| | Roofmate RL-X | 0.029 | 25,35,50,60,70,80,90,100,120 | Flat roof | |
| | Styrofoam IB-X | 0.029 | 25,35,50,60,70,80,100,120 | Wall lining | |
| Wallmate CW-X | 0.029 | 25,35,50,60,70,80,100,120 | Cavity wall | | |
| Web Dynamics | Thinsulex (multifoil) | 0.53 | 30 | Pitched roof | |

HERTS TECHNICAL FORUM TECHNICAL NOTE 10
INSULATION FROM RECYCLABLE OR NATURAL SOURCES
Compliance with Approved Document L1B 2010

VENTED COLD DECK PITCHED ROOF – insulation between and over joists

U- Value achieved maximum 0.16 W/m²K

| Product | Source | λ-Value (w/mK) | Solution |
|--------------------|------------------------------|----------------|--|
| Warmcel 300 | Recycled Newspaper | 0.040 | 250mm |
| Thermafleece | 80% Sheepswool blend | 0.038 | 240mm (100mm between, 140mm over joists) |
| Thermafleece PB20 | 60% Sheepswool blend | 0.039 | 240mm (100mm between, 140mm over joists) |
| YBS Non-Itch | 85% Recycled plastic bottles | 0.0425 | 270mm (100mm between + 170 over) |
| Rockwool Rockprime | Rock Mineral Wool Granulate | 0.045 | 270mm (100mm between & 170mm over) |

VENTED COLD DECK PITCHED ROOF – insulation between and under rafters

U- Value achieved maximum 0.18 W/m²K

| Product | Source | λ-Value | Solution |
|-------------------|----------------|---------|---|
| Thermafleece | 80% Sheepswool | 0.038 | 100mm between rafters + 165mm under. (50mm Ventilated space required with F1 felts) |
| Thermafleece PB20 | 60% Sheepswool | 0.039 | 100mm between rafters + 165mm under. (50mm Ventilated space required with F1 felts) |

TIMBER FRAME WALL (Non-breathing structure)

U- Value achieved maximum 0.28 W/m²K

| External Finish | Insulation between studs | Internal Finish |
|--|--|---|
| 102mm Brick, 50mm vented cavity, breather membrane, 9mm OSB or 12.5mm Ply. | 150mm of Warmcel 500 dry-injection. (Assumes 12.5% Timber Fraction) | 9mm OSB, 500 gauge vapour check, 25mm service cavity, 12.5mm plasterboard |
| 102mm Brick, 50mm vented cavity, breather membrane, 9mm OSB or 12.5mm Ply. | 150mm Warmcel - damp spray. (Assumes 12.5% Timber Fraction.) | 500 gauge vapour check, 12.5mm plasterboard. |
| Brick / Tile / or Timber Clad Finish, 50mm vented cavity, breather membrane, 9mm OSB | 150mm Thermafleece or Thermafleece PB20. | Accredited low emissivity membrane, 25mm service void, 12.5mm plasterboard. |
| Brick / Tile / or Timber Clad Finish, 50mm vented cavity, breather membrane, 9mm OSB | 160mm Thermafleece or 170mm Thermafleece PB20. | 500 gauge vapour check, 12.5mm plasterboard. |
| Brick / Tile / or Timber Clad Finish, 50mm vented cavity, breather membrane, 9mm OSB | 140mm YBS Non-Itch 0.039W/mK grade.* | 500 gauge vapour check and 12.5mm plasterboard. |

*Non-Itch is available in two grades of thermal conductivity. 0.043W/mK and 0.039W/mK.

HERTS TECHNICAL FORUM TECHNICAL NOTE 10
INDICATIVE U VALUES FOR WINDOWS & DOORS
Compliance with revised Approved Document L1B 2010

Introduction:

- Any PVC-U or timber framed window (installed vertically) or fully glazed door should have a Window Energy Rating (WER) of band C or better.
- Alternatively, the window should have a U-value of 1.6W/m²k or better.
- All doors should have a U-Value of 1.8W/m²k or better.
- Doors with > 50% of their internal face area glazed should have an overall U-value of 1.8W/m²k.
(See paragraph at the top of next page)

When available, manufacturers' certified U-values should be used in preference to the data in these tables. Further information can be obtained from CERTass, FENSA or the Glass & Glazing Federation.

DOUBLE GLAZING

**U-Value required minimum 1.6 W/m²K (Windows)
1.8 W/m²K (Doors)**

| Pilkington Glass | Outer Pane | Cavity / Spacer / Gas | Inner Pane | U-value |
|---------------------------|-------------------|--------------------------------------|-------------------|----------------|
| Typical IGU | 4mm Optifloat | 16mm air | 4mm K-Glass | 1.7 |
| energiKare Classic | 4mm Optiwhite | 16mm argon with Aluminium spacer bar | 4mm K-Glass | 1.5 |
| | 4mm Optiwhite | | 4mm K-Glass OW | 1.5 |
| energiKare Plus | 4mm Optiwhite | 16mm argon plus warm edge spacer bar | 4mm K-Glass | 1.5 |
| | 4mm Optiwhite | | 4mm K-Glass OW | 1.5 |
| Saint-Gobain Glass | Outer Pane | Cavity / Spacer / Gas | Inner Pane | U-Value |
| SGG Planitherm | 4mm Float Glass | 16mm air plus warm edge spacer bar | 4mm Total + | 1.4 |
| SGG Planitherm | 4mm Float Glass | 16mm argon plus warm edge spacer bar | 4mm Total + | 1.1 |
| SGG Planitherm | 4mm Float Glass | 20mm air plus warm edge spacer bar | 4mm Total + | 1.4 |
| SGG Planitherm | 4mm Float Glass | 20mm argon plus warm edge spacer bar | 4mm Total + | 1.1 |

Rooflights and Roof Windows:

- Where windows and rooflights area installed within a sloping roof, the standard U-values will need to be adjusted as per table below

| Inclination Of Roof | U-value Adjustment (W/m²K) | |
|-----------------------------------|--|-------------------------------------|
| | Twin skin or double glazed | Triple skin or triple glazed |
| 70° or more (treated as vertical) | = 0.0 | = 0.0 |
| <70° and >60° | + 0.2 | + 0.1 |
| ≤60° and >40° | + 0.3 | + 0.2 |
| ≤40° and >20° | + 0.4 | + 0.2 |
| ≤20° (treated as horizontal) | + 0.5 | + 0.3 |

INDICATIVE U VALUES FOR GLAZED/PARTIALLY GLAZED DOORS

Where doors are fully glazed, the above table for U-values for windows and roof lights should be used. Where doors have more than 50% glazed area (approximately) the u-value of the door is the average of the appropriate window u-value and that of the non glazed part.

Given that there is a calculation procedure provided within the approved document, information on the actual U-Value should be given to the Building Control Section to assess the suitability of any door of this nature.

Further information can be obtained from CERTass, FENSA or the Glass & Glazing Federation.

TRIPLE GLAZING

Pilkington 'energiKare' Glazing:

| Outer Pane | Cavity | Middle Pane | Cavity | Inner Pane | U-value |
|------------|--------------|--------------|--------------|------------|---------|
| Optiwhite | 12mm argon | K Glass T | 12mm argon | K Glass | 1.0 |
| Optiwhite | 16mm argon | K Glass T | 16mm argon | K Glass | 0.8 |
| Optiwhite | 12mm argon | K Glass OW T | 12mm argon | K Glass OW | 1.0 |
| Optiwhite | 16mm argon | K Glass OW T | 16mm argon | K Glass OW | 0.8 |
| Optiwhite | 12mm krypton | K Glass OW T | 12mm krypton | K Glass OW | 0.7 |

DEFAULT U-VALUES GIVEN IN SAP 2009 VERSION 9.90 (MARCH 2010)

(TABLE 6e FOR TRIPLE GLAZED PVC-U AND WOODEN WINDOW FRAMES FOR GLASS MANUFACTURED BY COMPANIES OTHER THAN PILKINGTON)

| Triple Glazing | Wood / PVC-U Frame | |
|---|--------------------|------------------|
| | 12mm gap | 16mm gap or more |
| Triple glazing (low-E, $\epsilon^n = 0.2$, Air filled, hard coat) | 1.7 | 1.6 |
| Triple glazing (low-E, $\epsilon^n = 0.15$, Air filled, hard coat) | 1.7 | 1.6 |
| Triple glazing (low-E, $\epsilon^n = 0.1$, Air filled, soft coat) | 1.6 | 1.5 |
| Triple glazing (low-E, $\epsilon^n = 0.05$, Air filled, soft coat) | 1.5 | 1.4 |
| Triple glazing (low-E, $\epsilon^n = 0.2$, Argon filled, hard coat) | 1.6 | 1.5 |
| Triple glazing (low-E, $\epsilon^n = 0.15$, Argon filled, hard coat) | 1.5 | 1.4 |
| Triple glazing (low-E, $\epsilon^n = 0.1$, Argon filled, soft coat) | 1.5 | 1.4 |
| Triple glazing (low-E, $\epsilon^n = 0.05$, Argon filled, soft coat) | 1.4 | 1.3 |