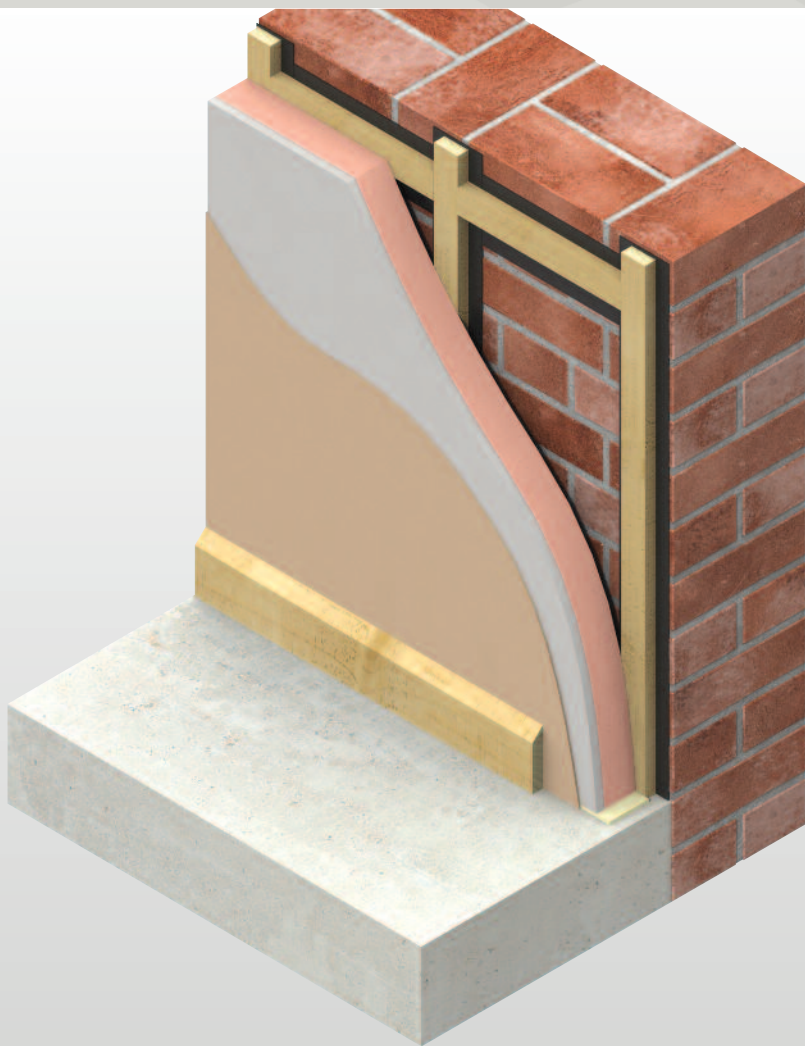




Kooltherm® K18 Insulated Plasterboard

INSULATED PLASTERBOARD FOR MECHANICALLY FIXED DRY-LINING



- Premium performance rigid thermoset insulation – thermal conductivities as low as 0.020 W/m-K
- Class 0 fire rating
- Class 0 fire rated insulation core
- Negligible smoke obscuration
- Insulation, dry-lining and vapour control in one board
- Allows quick response heating
- Unaffected by air infiltration
- Resistant to the passage of water vapour
- Easy to handle and install
- Ideal for new build and refurbishment
- Non-deleterious material
- Manufactured with a blowing agent that has zero ODP and low GWP



*Low Energy –
Low Carbon Buildings*

Typical Constructions and U-values

Assumptions

The U-values in the tables that follow have been calculated, under a management system certified to the BBA Scheme for Assessing the Competency of Persons to Undertake U-value and Condensation Risk Calculations, using the method detailed in BS / I.S. EN ISO 6946: 2007 (Building components and building elements. Thermal resistance and thermal transmittance. Calculation method), and using the conventions set out in BR443 (Conventions for U-value calculations). They are valid for the constructions shown in the details immediately above each table.



These examples are based on the use of 3 mm skim coated **Kingspan Kooltherm® K18 Insulated Plasterboard** mechanically fixed to both 25 x 47 mm treated softwood timber battens and metal furrings.

NB When calculating U-values to BS / I.S. EN ISO 6946: 2007, the type of mechanical fixing used may change the thickness of insulation required. The use of carbons steel fasteners of cross sectional area 4 mm² has been assumed at a density of 16.7 per m².

NB For the purposes of these calculations the standard of workmanship has been assumed good, and therefore the correction factor for air gaps has been ignored.

NB The figures quoted are for guidance only. A detailed U-value calculation and a condensation risk analysis should be completed for each project.

NB If your construction is different from those specified, and / or to gain a comprehensive U-value calculation along with a condensation risk analysis of your project, please consult the Kingspan Insulation Technical Service Department for assistance (see rear cover).

U-value Table Key

Where an **X** is shown, the U-value is higher than the worst of the maximum new build area weighted average / refurbishment (as applicable) U-values allowed by the 2010 Editions of Approved Documents L to the Building Regulations (England & Wales), the 2010 Editions of Technical Handbooks Section 6 (Scotland), the 2006 Editions of Technical Booklets F (Northern Ireland), or the 2008 Editions of Technical Guidance Documents L* (Republic of Ireland).

* Excluding Change of Use and Material Alterations.

Solid Masonry Walls

Solid Brickwork

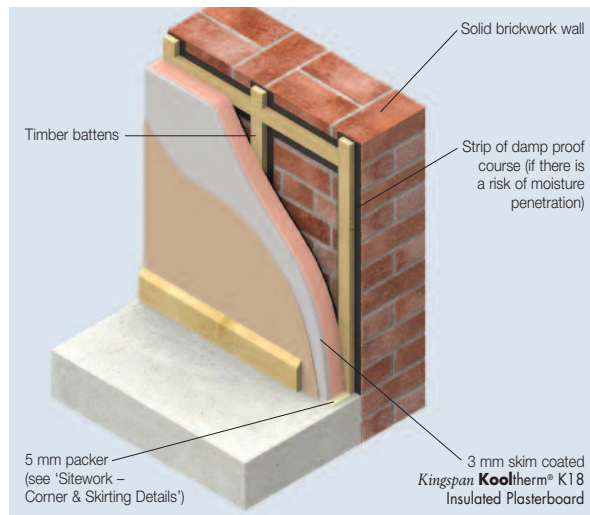


Figure 1

U-values (W/m²·K) for Various Product Thicknesses of Kingspan Kooltherm® K18 Insulated Plasterboard and Different Fixing Methods

Product Thickness* (mm)	Brickwork Thickness	
	102.5 mm	215 mm
Timber Battens at 600 mm centres		
57.5	X	X
62.5	X	0.30
67.5	0.29	0.28
72.5	0.28	0.27
82.5	0.25	0.24
87.5	0.23	0.23
92.5	0.22	0.22
102.5	0.20	0.20
112.5	0.19	0.18
122.5	0.17	0.17
Metal Furrings at 600 mm centres		
62.5	X	X
67.5	X	0.30
72.5	0.29	0.28
82.5	0.26	0.25
87.5	0.24	0.23
92.5	0.23	0.22
102.5	0.21	0.20
112.5	0.19	0.19
122.5	0.18	0.17

* Product thickness = insulant thickness + 12.5 mm plasterboard.

100 mm Blockwork with 10 mm Polymer Render

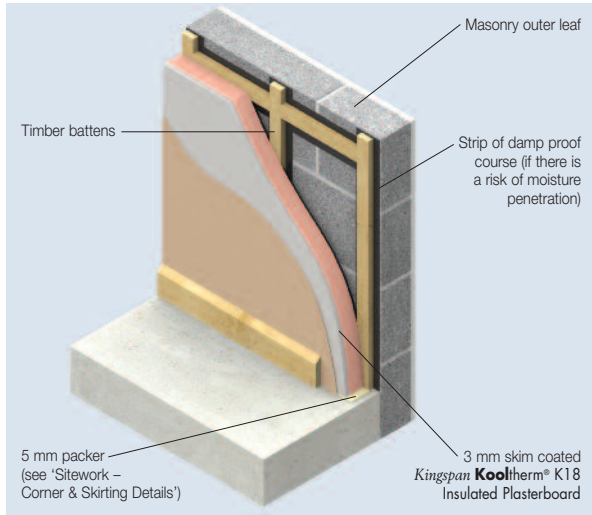


Figure 2

U-values (W/m ² -K) for Various Product Thicknesses of <i>Kingspan Kooltherm</i> [®] K18 Insulated Plasterboard and Different Fixing Methods						
Blockwork Density and λ-value (W/m-K)						
Product Thickness* (mm)	Blockwork Density and λ-value (W/m-K)				Thin Joint Aerated	
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)**	Aerated (0.11)**	Aerated (0.11)**	Aerated (0.11)**
Timber Battens at 600 mm centres						
37.5	X	X	X	X	X	X
42.5	X	X	X	0.34	0.34	0.34
47.5	X	X	0.34	0.32	0.32	0.32
52.5	X	X	0.32	0.30	0.30	0.30
57.5	0.33	0.32	0.29	0.28	0.27	0.27
62.5	0.31	0.30	0.27	0.26	0.26	0.26
72.5	0.27	0.27	0.24	0.23	0.23	0.23
82.5	0.24	0.24	0.22	0.21	0.21	0.21
87.5	0.23	0.23	0.21	0.20	0.20	0.20
92.5	0.22	0.22	0.20	0.19	0.19	0.19
102.5	0.20	0.20	0.18	0.18	0.18	0.18
112.5	0.18	0.18	0.17	0.16	0.16	0.16
122.5	0.17	0.17	0.16	0.15	0.15	0.15
Metal Furrings at 600 mm centres						
42.5	X	X	X	X	X	X
47.5	X	X	X	0.34	0.33	0.33
52.5	X	X	0.33	0.31	0.31	0.31
57.5	0.35	0.34	0.30	0.29	0.29	0.29
62.5	0.33	0.32	0.28	0.27	0.27	0.27
72.5	0.29	0.28	0.25	0.24	0.24	0.24
82.5	0.25	0.25	0.23	0.22	0.22	0.22
87.5	0.24	0.23	0.22	0.21	0.21	0.21
92.5	0.23	0.22	0.21	0.20	0.20	0.20
102.5	0.21	0.20	0.19	0.18	0.18	0.18
112.5	0.19	0.19	0.17	0.17	0.17	0.17
122.5	0.18	0.17	0.16	0.16	0.16	0.16

* Product thickness = insulant thickness + 12.5 mm plasterboard.

** A 6.6% thermal bridging factor has assumed for the effect of mortar joints.

*** A 1.4% thermal bridging factor has assumed for the effect of mortar joints.

215 mm Blockwork with 10 mm Polymer Render

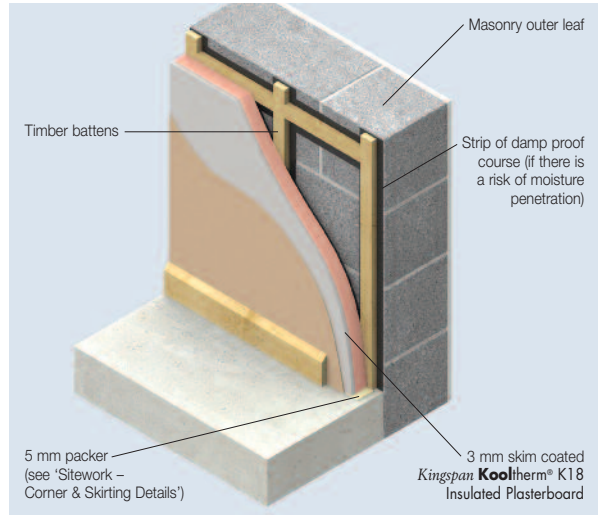


Figure 3

U-values (W/m ² -K) for Various Product Thicknesses of <i>Kingspan Kooltherm</i> [®] K18 Insulated Plasterboard and Different Fixing Methods						
Blockwork Density and λ-value (W/m-K)						
Product Thickness* (mm)	Blockwork Density and λ-value (W/m-K)				Thin Joint Aerated	
	Dense (1.13)	Medium (0.51)	Lightweight (0.15)**	Aerated (0.11)**	Aerated (0.11)**	Aerated (0.11)**
Timber Battens at 600 mm centres						
32.5	X	X	0.34	0.30	0.30	0.30
37.5	X	X	0.32	0.28	0.28	0.28
42.5	X	X	0.30	0.27	0.26	0.26
47.5	X	X	0.28	0.25	0.25	0.25
52.5	X	0.33	0.26	0.24	0.24	0.24
57.5	0.32	0.30	0.24	0.22	0.22	0.22
62.5	0.30	0.28	0.23	0.21	0.21	0.21
72.5	0.27	0.25	0.21	0.20	0.19	0.19
82.5	0.24	0.23	0.19	0.18	0.18	0.18
87.5	0.23	0.22	0.18	0.17	0.17	0.17
92.5	0.22	0.21	0.18	0.17	0.16	0.16
102.5	0.20	0.19	0.16	0.15	0.15	0.15
112.5	0.18	0.17	0.15	0.14	0.14	0.14
122.5	0.17	0.16	0.14	0.14	0.14	0.14
Metal Furrings at 600 mm centres						
32.5	X	X	X	0.32	0.31	0.31
37.5	X	X	0.33	0.30	0.29	0.29
42.5	X	X	0.31	0.28	0.27	0.27
47.5	X	X	0.29	0.26	0.26	0.26
52.5	X	0.35	0.27	0.25	0.25	0.25
57.5	0.34	0.32	0.25	0.23	0.23	0.23
62.5	0.32	0.30	0.24	0.22	0.22	0.22
72.5	0.28	0.26	0.22	0.20	0.20	0.20
82.5	0.25	0.24	0.20	0.18	0.18	0.18
87.5	0.23	0.22	0.19	0.18	0.18	0.18
92.5	0.22	0.21	0.18	0.17	0.17	0.17
102.5	0.20	0.19	0.17	0.16	0.16	0.16
112.5	0.19	0.18	0.16	0.15	0.15	0.15
122.5	0.17	0.17	0.15	0.14	0.14	0.14

* Product thickness = insulant thickness + 12.5 mm plasterboard.

** A 6.6% thermal bridging factor has assumed for the effect of mortar joints.

*** A 1.4% thermal bridging factor has assumed for the effect of mortar joints.

Solid Stonework

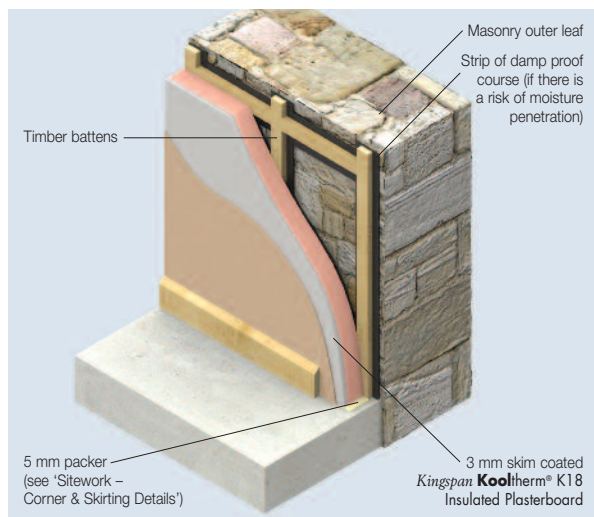


Figure 4

U-values (W/m²·K) for Various Product Thicknesses of Kingspan Kooltherm® K18 Insulated Plasterboard and Different Fixing Methods

Product Thickness* (mm)	Thickness of Stonework	
	300 mm Sandstone**	450 mm Sandstone**
Timber Battens at 600 mm centres		
62.5	X	X
67.5	0.29	0.29
72.5	0.28	0.27
82.5	0.25	0.24
87.5	0.23	0.23
92.5	0.22	0.22
102.5	0.20	0.20
112.5	0.19	0.18
122.5	0.17	0.17
Metal Furrings at 600 mm centres		
62.5	X	X
67.5	0.31	0.30
72.5	0.29	0.28
82.5	0.26	0.25
87.5	0.24	0.24
92.5	0.23	0.23
102.5	0.21	0.21
112.5	0.19	0.19
122.5	0.18	0.17

* Product thickness = insulant thickness + 12.5 mm plasterboard.

** Calculations assume sandstone stonework of λ -value (2.30 W/m·K).

Linear Thermal Bridging at Openings

Linear thermal bridging describes the heat loss at junctions between elements, where the geometry of the junction means that a building's primary insulation layer is not continuous or is reduced. This heat loss is represented by the junction's ψ value. The ψ -values of all the linear thermal bridges in a building are used to calculate an overall γ -value which is used in whole building carbon dioxide emissions calculation software.

At a window or door opening, in a wall insulated with Kingspan Kooltherm® K18 Insulated Plasterboard, the linear thermal bridge is the reveal. This linear thermal bridge can be reduced by insulating the reveal. The key factor is the thermal resistance (R-value) of this insulation layer.

Accredited Construction Details (England & Wales / Scotland / Northern Ireland) and Acceptable Construction Details (Republic of Ireland), collectively referred to here as ACDs, feature details for walls with insulated dry-lining, with reveals insulated with a material of minimum thermal resistance (R-value) of 0.34 m²·K/W. These constructions have the following ψ -values: 0.50 W/m·K for a steel lintel with a perforated steel base, 0.30 W/m·K for other lintels (including steel lintels), 0.04 W/m·K for a sill and 0.05 W/m·K for a jamb.

Adhering to these constructions, entitles a designer to use a default ψ -value in whole building carbon dioxide emissions calculation software.

ACDs are specifically targeted at new build constructions but, where applicable, they are also considered best practice for refurbishment.

Reveals should be designed to accommodate the 32.5 mm of Kingspan Kooltherm® K18 Insulated Plasterboard required to achieve an R-value of 0.34 m²·K/W, and the depth of fixing system and finishings (see Sitework – Figure 9).

Design Considerations

Environmental Impact & Responsible Sourcing

Green Guide Rating

An Ecoprofile, certified by BRE Certification to the 2008 BRE Environmental Profiles Methodology, has been created for the insulation component of **Kingspan Kooltherm® K18 Insulated Plasterboard** produced at Kingspan Insulation's Pembridge manufacturing facility. The BRE has assigned the product a 2008 Green Guide Summary Rating of A+.



Environmental Profiles Scheme
Certificate Number ENP 410

Responsible Sourcing

Kingspan Kooltherm® K18 Insulated Plasterboard produced at Kingspan Insulation's Pembridge and Castleblayney manufacturing facilities is manufactured under a management system certified to BS / I.S. EN ISO 14001: 2004. The principle polymer component of the product produced at these facilities is also manufactured under a management system certified to BS EN ISO 14001: 2004.

NB The above information is correct at the time of writing. Please confirm at the point of need by contacting Kingspan Insulation's Technical Services Department (see rear cover), from which copies of Kingspan Insulation and its suppliers' ISO 14001 certificates can be obtained along with confirmation of Kingspan Insulation's products' Green Guide ratings.

Sustainability & Responsibility

Kingspan Insulation has a long-term commitment to sustainability and responsibility: as a manufacturer and supplier of insulation products; as an employer; as a substantial landholder; and as a key member of its neighbouring communities.

A report covering the sustainability and responsibility of Kingspan Insulation Ltd's British operations is available at www.kingspaninsulation.co.uk/sustainabilityandresponsibility.

Specification Clause

Kingspan Kooltherm® K18 Insulated Plasterboard should be described in specifications as:-

The wall dry-lining insulation shall be **Kingspan Kooltherm® K18 Insulated Plasterboard** ___ mm thick: comprising a premium performance rigid thermoset insulation core with 12.5 mm plasterboard bonded to its front surface and a low emissivity composite foil facing on its reverse surface. The product shall be manufactured: with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP); under a management system certified to BS / I.S. EN ISO 9001: 2008, BS / I.S. EN ISO 14001: 2004 and BS / I.S. OHSAS 18001: 2007; by Kingspan Insulation Limited; and installed in accordance with the instructions issued by them.

NBS Specifications

Details also available in NBS Plus.

NBS users should refer to clause(s):

K10 145, K10 155, K10 165,

K10 175, K10 205, K10 415

(Standard and Intermediate)

K10 15, K10 35, K10 41 (Minor Works)



Design Standards

BS 8212: 1995 (Code of practice for dry lining and partitioning using gypsum plasterboard) should be considered.

Fixing Methods

Kingspan Kooltherm® K18 Insulated Plasterboard can be installed utilising mechanical fixing techniques only.

Kingspan Kooltherm® K17 Insulated Plasterboard should be used for dot and dab bonding using plaster, and proprietary, adhesives.

Limitations

Kingspan Kooltherm® K18 Insulated Plasterboard has a gypsum plasterboard face. It should, therefore, not be used to isolate dampness, nor be used in continuously damp or humid conditions.

Fire Stops

Current Building Regulations / Standards should be considered with regard to the requirements for and provision of fire stops.

Water Vapour Control / Condensation

Consideration should be given to the risk of condensation, when designing thermal elements.

When internally lining a construction with insulation, condensation can be controlled by ensuring there is a layer of high vapour resistance on the internal surface of the construction. **Kingspan Kooltherm® K18 Insulated Plasterboard** contains an integral vapour control layer and, when installed correctly, with appropriate detailing at joints between sheets, penetrations and wall perimeters, can provide the necessary vapour resistance. If required, the vapour resistance of the wall lining can be increased by the application of two coats of Gyproc Drywall Sealer.

A condensation risk analysis should be carried out following the procedures set out in BS 5250: 2002 (Code of practice for the control of condensation in buildings). The Kingspan Insulation Technical Service Department (see rear cover) can provide this service.

Sitework

Preparation

- The ceiling lining should be in position before wall lining commences.
- Wall mounted fittings such as electrical sockets should be fitted so as to take into account the additional wall thickness.
- On existing constructions all surfaces should be clean, dry and free of loose or flaking materials. Wallpaper should be stripped and surface mounted fittings removed.

Mechanical Fixing

To Timber Framing Studs / Battens

- This method may be used on timber frame constructions or on masonry walls that will support and retain battens and associated fixings.
- Vertical timber framing studs / battens should be set at maximum 600 mm horizontal centres, and timber framing studs / battens / noggins should be positioned horizontally at floor and ceiling level and at max. 1200 mm vertical centres.
- If fixing to battens, they should be mechanically fixed to the wall, and comprise 25 x 47 mm (min.) treated softwood, backed with a strip of damp proof course (DPC).
- Where joints between sheets of insulated plasterboard are unsupported by the timber framing studs / battens, timber noggins should be installed.
- Each sheet of insulated plasterboard should lap timber framing studs / battens / noggins by 19 mm (min.) at sheet joints.
- Sheets of *Kingspan Kooltherm*® K18 Insulated Plasterboard should be fixed using either drywall screws at 300 mm centres, or large headed galvanised clout nails at 150 mm centres.
- When installing sheets onto timber battens, fixings should be located no less than 10 mm from the edges of the sheets, and be long enough to allow minimum 22.5 mm penetration of the timber. Fixings should not penetrate through the battens.
- When installing sheets onto timber frame studs, fixings should be located no less than 10 mm from the edges of the sheets, and be long enough to allow a minimum 25 mm penetration of the timber.
- Fixings should be driven straight, with the heads embedded just below the surface of the plasterboard.
- Care should be taken not to overdrive nails / screws.

To Metal Framing Systems

- Because metal framing systems are proprietary, sitework guidance should be sought from the framing system manufacturer.
- However, in the absence of any other guidance, the instructions laid out below may be followed.
- The metal framing should be installed as a separate structure, independent from the masonry or concrete wall, to provide a vertical and flat base for the sheets of insulated plasterboard.
- The framing should be set at a maximum of 600 mm centres, and to coincide with the long edges, and centre lines, of the sheets of insulated plasterboard.
- Short lengths of metal framing should be fixed horizontally between the vertical pieces at skirting level, just below the ceiling or soffit level, and at max. 1200 mm vertical centres.
- Short lengths of metal framing should also be used as noggins where board joints between sheets are unsupported.
- Sheets of *Kingspan Kooltherm*® K18 Insulated Plasterboard should be fixed using either drywall screws at 300 mm centres, or self drilling and tapping, countersunk, zinc coated screws placed at 150 mm centres.
- Fixings should be located no less than 10 mm from the edges of the sheet.
- Fixings should be driven straight, with the heads embedded just below the surface of the plasterboard.
- Care should be taken not to overdrive screws.

Direct to Masonry Substrates

- This installation method is suitable for rendered or cavity walls.
- The wall should be sound, dry and flat (as surface irregularities may impede fixing of the board).
- The board should be fully restrained using mechanical fixings.
- The type and length of mechanical fixing required will depend on the type of masonry substrate and the the thickness of *Kingspan Kooltherm*® K18 Insulated Plasterboard.

For details on fixings refer to:

Ejot UK Limited +44 (0) 1977 687 040
www.ejot.co.uk

MAK Fasteners +353 (0) 1 451 99 00
www.makfasteners.com

Tech Fasteners +353 (0) 1 457 33 00
www.techfasteners.ie

- Fixings should not overlap board edges.

To Timber Joists or Rafters

- Sheets of *Kingspan Kooltherm*® K18 Insulated Plasterboard may be used to line ceilings (see Figure 5).

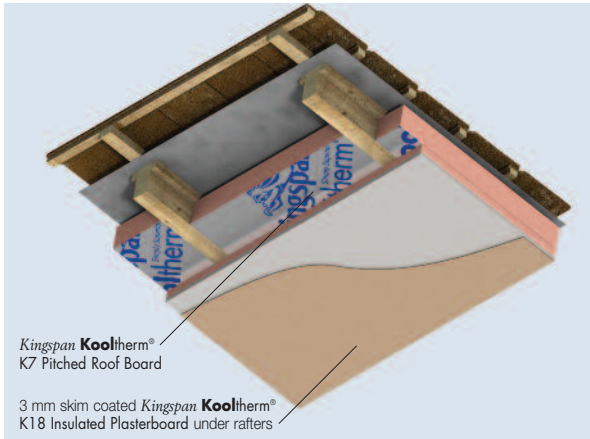


Figure 5 – Mechanically fixed to timber rafters with *Kingspan Kooltherm*® K7 Pitched Roof Board between rafters

- Sheets must always be placed with the long edge running across the joists or rafters, and all edges must be supported.
- Where joints between sheets of insulated plasterboard are unsupported by the timber joists / rafters, timber noggins should be installed.
- Each sheet of insulated plasterboard should lap joists / rafters / noggins by 19 mm (min.) at sheet joints.
- Sheets should be fixed using either drywall screws at 230 mm centres, or large-headed galvanized clout nails placed at 150 mm centres.
- Fixings should be located no less than 10 mm from the edges of the sheet, and be long enough to allow a minimum 25 mm penetration of the timber.
- Fixings should be driven straight, with the heads embedded just below the surface of the plasterboard.
- Care should be taken not to overdrive nails / screws.

Fixing Heavy Internal Fittings

- Suitable mechanical fixings should be used for heavy internal fittings (kitchen units, shelving etc), to ensure the load is applied direct to the supporting wall and not to the *Kingspan Kooltherm*® K18 Insulated Plasterboard.

For details on fixings refer to:

Tiger Fixings +44 (0) 845 603 8877
www.tigerfixings.com

MAK Fasteners +353 (0) 1 451 99 00
www.makfasteners.com

Tech Fasteners +353 (0) 1 457 33 00
www.techfasteners.ie

- Alternatively, where there are to be extensive heavy internal fittings, the construction outlined in Figure 6 can be adopted.

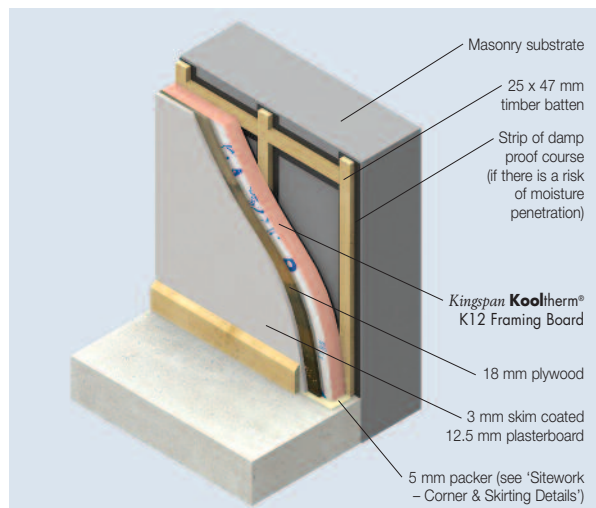


Figure 6

- Vertical timber framing studs / battens should be set at maximum 600 mm horizontal centres and timber framing studs / battens / noggins should be positioned horizontally at floor and ceiling level and at max. 1200 mm vertical centres.
- If fixing to battens, they should be mechanically fixed to the wall, and comprise 25 x 47 mm (min.) treated softwood, backed with a strip of damp proof course (DPC).
- Where insulation board joints are unsupported by the timber framing studs / battens, timber noggins should be installed.

- Each insulation board should lap timber framing studs / battens / noggins by 19 mm (min.) at board joints.
- Boards of *Kingspan Kooltherm*® K12 Framing Board should be temporarily fixed / nailed to timber framing studs / battens.
- 18 mm plywood should then be fixed through insulation boards to the timber framing studs / battens, using either drywall screws at 300 mm centres, or large headed galvanised clout nails at 150 mm centres.
- When fixing plywood through the insulation boards onto timber battens, fixings should be located no less than 10 mm from the edges of the sheets, and be long enough to allow minimum 22.5 mm penetration of the timber. Fixings should not penetrate through the battens.
- When fixing plywood through the insulation boards onto a timber frame, fixings should be located no less than 10 mm from the edges of the sheets, and be long enough to allow a minimum 25 mm penetration of the timber.
- Fixings should be driven straight, with the heads embedded just below the surface of the plywood.
- 12.5 mm plasterboard is then fixed to the plywood, using either drywall screws at 300 mm centres, or large headed galvanised clout nails at 150 mm centres.
- Fixings should be driven straight, with the heads embedded just below the surface of the plasterboard.
- Care should be taken not to overdrive nails / screws.
- Heavy fittings can be fixed through the plasterboard directly to the plywood.

Corner & Skirting Details

- For internal and external corners, sheets should be cut and rebated to allow a plasterboard / plasterboard joint at the angle (see Figures 7 & 9).
- For internal and external corners, ensure sheets are lightly butted and air gaps minimised to reduce the risk of cold bridging (see Figures 7 & 9).

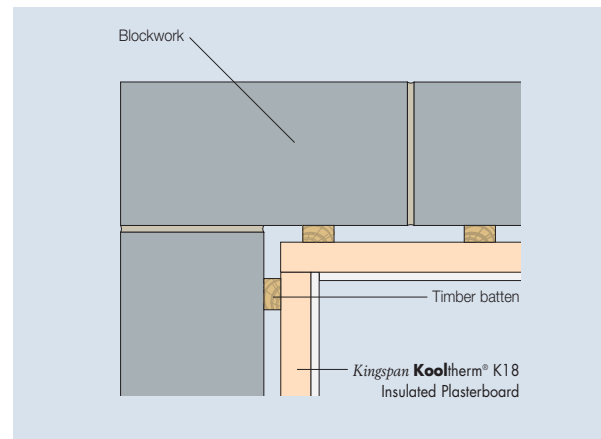


Figure 7 – Internal corner detail

- A 5 mm packer should be used at the base of the wall to provide a level surface from which to build up the boards.
- The packer should be replaced with a flexible urethane / acoustic sealant prior to skirting being fitted (see Figure 8).

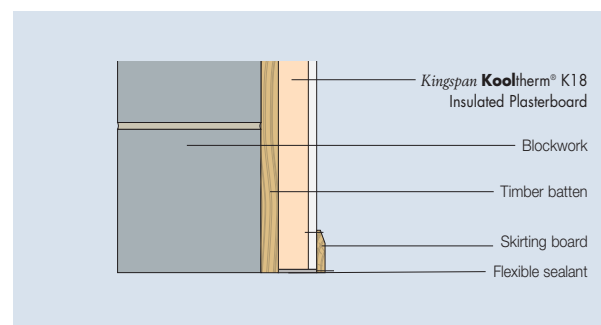


Figure 8 – Packer and skirting detail

Window / Door Reveals & Soffit Details

- Fixing should employ the same method as is used for the plain wall areas.
- The use of a thinner sheet of **Kingspan Kooltherm® K18 Insulated Plasterboard** at reveals may be necessary (see Figure 9).

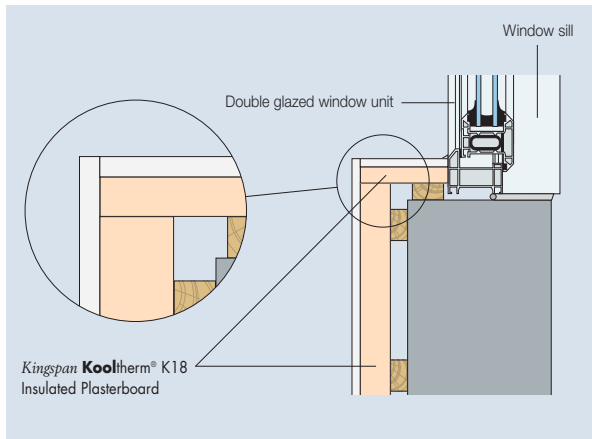


Figure 9 – Insulated reveal and external corner

Finishing

- To avoid air leakage, any penetrations through the insulation (electrical sockets, plumbing and wiring etc) should be sealed with vapour resistant mastic sealant.
- Any remaining gaps between boards / sheets of insulation should be filled with expanding urethane sealant.
- Tapered edged boards allow the employment of standard dry-lining techniques.
- Plasterboard tape should be employed at all board joints, and a plaster skim finish applied.
- The skimming should be carried out in accordance with the specified plaster manufacturer's instructions, particularly in relation to the need to allow thorough drying of the plaster prior to decoration.

General

Cutting

- Cutting should be carried out either by using a fine toothed saw, or by using a sharp knife to cut through the insulation and paper backing of the plasterboard, then snapping the sheet face down over a straight edge and cutting the paper facing of the plasterboard on the other side.
- Ensure accurate trimming to achieve close butting joints and continuity of insulation.

Availability

- **Kingspan Kooltherm® K18 Insulated Plasterboard** is available through specialist insulation distributors and selected builders' merchants throughout the UK and Ireland.

Packaging and Storage

- The polyethylene packaging of Kingspan Insulation products, which is recyclable, should not be considered adequate for outdoor protection.
- Ideally sheets should be stored inside a building. If, however, temporary outdoor storage cannot be avoided then the sheets should be stacked flat on a level base, clear of the ground, and completely protected from inclement weather by use of an opaque polythene sheet or weatherproof tarpaulin. Sheets that have been allowed to get wet should not be used.

Health and Safety

- Kingspan Insulation products are chemically inert and safe to use.
- A Safety Information Data Sheet for this product is available from the Kingspan Insulation website www.kingspaninsulation.co.uk/safety or www.kingspaninsulation.ie/safety.

Please note that the reflective surfaces on this product are designed to enhance its thermal performance. As such, they will reflect light as well as heat, including ultraviolet light. Therefore, if this product is being installed during very bright or sunny weather, it is advisable to wear UV protective sunglasses or goggles, and if the skin is exposed for a significant period of time, to protect the bare skin with a UV block sun cream.

The reflective facings used on this product can be slippery when wet. Therefore, it is recommended that any excess material should be contained to avoid a slip hazard.

Warning – do not stand on or otherwise support your weight on this product unless it is fully supported by a load bearing surface.

Product Details

The Front Facing

The front facing of *Kingspan Kooltherm® K18 Insulated Plasterboard* is a tapered edge gypsum based plasterboard which readily accepts dry-jointing materials and plaster skim.

The Core

The core of *Kingspan Kooltherm® K18 Insulated Plasterboard* is a premium performance rigid thermoset modified resin insulant manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).



The Reverse Face

The reverse facing of *Kingspan Kooltherm® K18 Insulated Plasterboard* is a low emissivity composite foil, autohesively bonded to the insulation core during manufacture. This reflective, low emissivity surface improves the thermal resistance of any unventilated cavity adjacent to the product.

Standards and Approvals

Kingspan Kooltherm® K18 Insulated Plasterboard is manufactured to the highest standards under a management system certified to BS / I.S. EN ISO 9001: 2008 (Quality management systems. Requirements), BS / I.S. EN ISO 14001: 2004 (Environmental Management Systems. Requirements) and BS / I.S. OHSAS 18001: 2007 (Health and Safety Management Systems. Requirements).

The use of *Kingspan Kooltherm® K18 Insulated Plasterboard* produced at Kingspan Insulation's Castleblayney manufacturing facility is covered by NSAI Agrément Certificate 09/0329.



Standard Dimensions

Kingspan Kooltherm® K18 Insulated Plasterboard is available in the following standard size:

Nominal Dimension	Availability
Length (m)	2.4
Width (m)	1.2
Plasterboard Thickness (mm)	12.5
Insulant Thickness (mm)	Refer to local distributor or Kingspan Insulation price list for current stock and non-stock sizes.

Compressive Strength

The compressive strength of *Kingspan Kooltherm® K18 Insulated Plasterboard* typically exceeds 100 kPa at 10% compression, when tested to BS / I.S. EN 826: 1996 (Thermal insulating products for building applications. Determination of compression behaviour).

Water Vapour Resistance

Adjusted for the effect of board joints, the non-plasterboard component of the product typically achieves a resistance far greater than 100 MN·s/g, when tested in accordance with BS EN 12086: 1997 / I.S. EN 12086: 1998 (Thermal insulating products for building applications. Determination of water vapour transmission properties). For the purposes of calculation of condensation risk, the resistivity of the plasterboard component of the product should be taken as 50 MN·s/g·m.

Durability

If correctly installed, *Kingspan Kooltherm® K18 Insulated Plasterboard* can have an indefinite life. Its durability depends on the supporting structure and the conditions of its use.

Resistance to Solvents, Fungi & Rodents

The insulation core is resistant to short-term contact with petrol and with most dilute acids, alkalis and mineral oils. However, it is recommended that any spills be cleaned off fully before the boards are installed. Ensure that safe methods of cleaning are used, as recommended by the suppliers of the spilt liquid. The insulation core is not resistant to some solvent-based adhesive systems, particularly those containing methyl ethyl ketone. Adhesives containing such solvents should not be used in association with this product. Damaged boards or boards that have been in contact with harsh solvents or acids should not be used.

The insulation core and facings used in the manufacture of *Kingspan Kooltherm® K18 Insulated Plasterboard* resist attack by mould and microbial growth and do not provide any food value to vermin.

Fire Performance

Kingspan Kooltherm® K18 Insulated Plasterboard, when tested with its plasterboard facing innermost, and its rigid thermoset insulation core, are Class 0, as defined by the Building Regulations.

The rigid thermoset insulation core of *Kingspan Kooltherm*® K18 Insulated Plasterboard, when subjected to the British Standard fire test specified in the table below, has achieved the result shown.

Test	Result
BS 5111-1: 1974 (Smoke Obscuration)	< 5% (Negligible smoke obscuration)

Further details of the fire performance of Kingspan Insulation products may be obtained from the Kingspan Insulation Technical Service Department (see rear cover).

Thermal Properties

The λ -values and R-values detailed below are quoted in accordance with BS / I.S. EN 13166: 2008 (Thermal insulation products for buildings – Factory made products of phenolic foam (PF) – Specification).

Thermal Conductivity

The thermal conductivity (λ -value) of the plasterboard component of *Kingspan Kooltherm*® K18 Insulated Plasterboard is 0.19 W/m·K.

The thermal conductivity (λ -value) of the insulation core of *Kingspan Kooltherm*® K18 Insulated Plasterboard is: 0.023 W/m·K (insulant thickness 15–24); 0.021 W/m·K (insulant thickness 25–44 mm); and 0.020 W/m·K (insulant thickness \geq 45 mm).

Thermal Resistance

Thermal resistance (R-value) varies with the thickness of each component. It is calculated by dividing the thickness of each component (expressed in metres) by its thermal conductivity, followed by adding the resulting figures together. The sum is rounded down to the nearest 0.05 (m²·K/W).

*Product Thickness (mm)	Thermal Resistance (m ² ·K/W)
32.5	0.90
37.5	1.25
42.5	1.45
47.5	1.70
52.5	1.95
57.2	2.30
62.5	2.55
67.5	2.80
72.5	3.05
82.5	3.55
87.5	3.80
92.5	4.05
102.5	4.55
112.5	5.05
122.5	5.55

* Product thickness = insulation thickness + 12.5 mm plasterboard.

NB Refer to local distributor or Kingspan Insulation price list for current stock and non-stock sizes.

Contact Details

Customer Service

For quotations, order placement and details of despatches please contact the Kingspan Insulation Customer Service Department on the numbers below:

UK	- Tel:	+44 (0) 1544 388 601
	- Fax:	+44 (0) 1544 388 888
	- email:	customerservice@kingspaninsulation.co.uk
Ireland	- Tel:	+353 (0) 42 979 5000
	- Fax:	+353 (0) 42 975 4299
	- email:	info@kingspaninsulation.ie

Literature & Samples

Kingspan Insulation produces a comprehensive range of technical literature for specifiers, contractors, stockists and end users. The literature contains clear 'user friendly' advice on typical design; design considerations; thermal properties; sitework and product data.

Available as a complete Design Manual or as individual product brochures, Kingspan Insulation technical literature is an essential specification tool. For copies please contact the Kingspan Insulation Marketing Department, or visit the Kingspan Insulation website, using the details below:

UK	- Tel:	+44 (0) 1544 387 384
	- Fax:	+44 (0) 1544 387 484
	- email:	literature@kingspaninsulation.co.uk
	- www.kingspaninsulation.co.uk/literature	
Ireland	- Tel:	+353 (0) 42 979 5000
	- Fax:	+353 (0) 42 975 4299
	- email:	info@kingspaninsulation.ie
	- www.kingspaninsulation.ie/literature	

Tapered Roofing

For technical guidance, quotations, order placement and details of despatches please contact the Kingspan Insulation Tapered Roofing Department on the numbers below:

UK	- Tel:	+44 (0) 1544 387 383
	- Fax:	+44 (0) 1544 387 483
	- email:	tapered@kingspaninsulation.co.uk
Ireland	- Tel:	+353 (0) 42 975 4297
	- Fax:	+353 (0) 42 975 4296
	- email:	tapered@kingspaninsulation.ie

Technical Advice / Design

Kingspan Insulation supports all of its products with a comprehensive Technical Advisory Service for specifiers, stockists and contractors.

This includes a computer-aided service designed to give fast, accurate technical advice. Simply phone the Kingspan Insulation Technical Service Department with your project specification. Calculations can be carried out to provide U-values, condensation / dew point risk, required insulation thicknesses etc... Thereafter any number of permutations can be provided to help you achieve your desired targets.

The Kingspan Insulation Technical Service Department can also give general application advice and advice on design detailing and fixing etc... Site surveys are also undertaken as appropriate.

The Kingspan Insulation British Technical Service Department operates under a management system certified to the BBA Scheme for Assessing the Competency of Persons to Undertake U-value and Condensation Risk Calculations.



Please contact the Kingspan Insulation Technical Service Department on the numbers below:

UK	- Tel:	+44 (0) 1544 387 382
	- Fax:	+44 (0) 1544 387 482
	- email:	technical@kingspaninsulation.co.uk
Ireland	- Tel:	+353 (0) 42 975 4297
	- Fax:	+353 (0) 42 975 4296
	- email:	technical@kingspaninsulation.ie

General Enquiries

For all other enquiries contact Kingspan Insulation on the numbers below:

UK	- Tel:	+44 (0) 1544 388 601
	- Fax:	+44 (0) 1544 388 888
	- email:	info@kingspaninsulation.co.uk
Ireland	- Tel:	+353 (0) 42 979 5000
	- Fax:	+353 (0) 42 975 4299
	- email:	info@kingspaninsulation.ie

Kingspan Insulation Ltd. reserves the right to amend product specifications without prior notice. Product thicknesses shown in this document should not be taken as being available ex-stock and reference should be made to the current Kingspan Insulation price-list or advice sought from Kingspan Insulation's Customer Service Department (see above left). The information, technical details and fixing instructions etc. included in this literature are given in good faith and apply to uses described. Recommendations for use should be verified for suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, Kingspan Insulation offers a Technical Advisory Service (see above), the advice of which should be sought for uses of Kingspan Insulation products that are not specifically described herein. Please check that your copy of this literature is current by contacting the Kingspan Insulation Marketing Department (see left).

Kingspan Insulation Ltd is a member of:
The National Insulation Association (NIA)



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