



## Refurbishment Solutions

The Road to Improving your Building Energy Rating (BER)



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Please note that this document is produced as a guideline only to the requirements of the proposed building regulations and is designed purely to illustrate the potential performance levels achievable with Kingspan Insulation products. The actual Building Energy Rating will vary depending on additional specific details such as floor area, dimensions and extent of glazing etc and the guidance is therefore limited in this regard. An independent accredited Energy Assessor should be employed to carry out a detailed DEAP calculation to ensure an accurate specification for each dwelling. Accordingly, Kingspan Insulation Ltd accepts no liability for any errors, omissions or claims arising from the use of this document.

# Building regulations

## The Situation

There is a significant stock of existing buildings in Ireland that are poorly insulated, have poor quality windows and inefficient heating systems – it is pertinent that these houses are improved if we as a nation are to reduce our CO<sub>2</sub> emissions and reduce our reliance on imported energy sources. The new building regulations aim to further increase awareness of energy efficiency in buildings and apply this to existing dwellings.

On an individual level, ever increasing energy prices in terms of electricity, gas and oil will mean that these homes will become increasingly expensive to live in. While the new regulations do not stipulate that you have to improve the performance of your home, from a practical point of view improving the efficiency of your home will reap rewards in the long term in terms of energy savings.

## The Goal

The new Building Regulations require:

- A Building Energy Rating (BER) certificate for every dwelling when rented, sold or leased.
- This certificate will be valid for a period of 10 years provided that no amendments to the dwelling have been carried out in the meantime.
- Each certificate must be accompanied by additional information which will suggest some cost-effective improvements for guidance only in order to improve the Energy Rating of the dwelling.

## The Method

Using a similar assessment method as for new dwellings, each dwelling will be assessed by an Energy Assessor accredited by SEI (Sustainable Energy Ireland) using an updated DEAP calculation method. This will label buildings from being inefficient (G Rating) right up to very efficient (A1 Rating). The BER (Building Energy Rating) label will clearly indicate the amount of energy used in kWh (kilo-watt hours) per square metre of floor area per year, though this will only be indicative as the calculation method makes certain assumptions on heating cycles and occupancy. Although most existing buildings will rate closer to 'G', even relatively small improvements can significantly improve the energy rating to at least a 'C'.

## The Assessment

An SEI accredited assessor should be employed in order to carry out a survey of the existing building and compile all relevant information such as building dimensions, existing heating system, insulation levels and glazing details in order to determine the existing Building Energy Rating. This certificate will be provided to the homeowner along with a short list of recommendations to improve the performance of the building. This may include increased insulation levels, replacement of boiler, replacement of windows etc. As this is for guidance only there is no onus on the home owner to make these improvements other than the knowledge that they will significantly reduce both the cost of running their home and carbon dioxide emissions.

## The Dates

BERs for existing dwellings are required for all dwellings when rented, sold or leased from January 2009. BERs will be required for all existing dwellings regardless of age.

## The Recommendations

Existing dwellings will generally have poorly insulated walls, floors and roofs, poor performance windows, high levels of air leakage and inefficient heating systems all resulting in dwellings that are very expensive to heat. The following recommendations should be considered to upgrade your home:

### Increase Insulation Levels:

- The first step is to minimise heat lost through the building fabric. The easiest element to upgrade is the attic space as it is usually easily accessible. Consider a high performance rigid foam insulation such as Kooltherm K7 so as to ensure low fire risk and maximum thermal performance with minimum thickness of product.
- The next step is to consider the largest element area (therefore greatest total heat loss) which is usually the walls of the dwelling. Where it is possible to upgrade this element an externally insulated render system utilising Kingspan Kooltherm K5 board is an excellent method of significantly reducing heat loss with minimal disruption to the existing dwelling. An alternative is to use an internally insulated dry-lining board, though floor space will restrict the maximum thickness of the insulation.
- Lastly the floor could be upgraded but this will generally prove to be the most disruptive unless there is an existing suspended timber floor. In the case of a solid concrete floor it may be more realistic to just provide perimeter insulation at the junction between the concrete floor and the existing external walls as most heat loss occurs at this location.

### Replace Windows:

- Windows represent a significant path for heat loss especially if single glazed.
- Replacement windows should be at least double glazed and have a U-Value of 1.6W/m<sup>2</sup>K (area weighted average for glass and frame).
  - Ensure that replacement windows are adequately sealed against the jambs and that there is no air leakage.

### Replace Heating System:

- When the building fabric is upgraded it would be advisable to replace the existing heating system with a more energy efficient system.
- The new heating system should have an efficiency of at least 90%.

### Other Improvements:

- Solar hot water panels should be considered as part of the remedial works so as to minimise energy requirements during summer months.
- Consider replacing and draught stripping all external doors.
- Consider replacing standard light bulbs with more efficient and environmentally friendly Compact Fluorescent Bulbs.

## Timescale for residential energy performance compliance



## Energy Costs

The chart below demonstrates how significantly energy costs vary between energy ratings. These costs have been derived from the average results of calculations of a 150m<sup>2</sup> typical Irish 1970's bungalow.

BER	Energy cost per m <sup>2</sup> /yr (Approx)	Energy cost saving % (Approx compared to G)	CO <sub>2</sub> emissions (Kg/m <sup>2</sup> /yr)
A	€ 3.50	84%	12
B	€ 6.00	73%	28
C	€ 9.00	60%	40
D	€ 12.00	47%	60
E	€ 16.00	29%	80
F	€ 19.50	13%	100
G	€ 22.50	N/A	115

The summary chart on pages 6 and 7 gives some guidance on typical specifications to achieve these ratings. Please note they are indicative only and are not designed as a substitute for an individual assessment by an SEI assessor.

The subsequent details go through the various building elements such as walls, floors, and roofs and provide an outline specification for each. As characteristics of a home will vary, so too will the requirements and consideration needs to be given to your individual needs.

Kingspan Insulation have a dedicated technical team that can offer you further advice, so why wait to reduce your energy bills, call today  
**+353 (0) 42 975 4297 or email**  
**techline@insulation.kingspan.com**

## Explanation of terms used

**Breathable membrane** - is an advanced roofing membrane usually placed over the roof timber structure to provide a waterproofing layer. It has the additional properties of being 'breathable' or 'vapour permeable'.

**Closed cell** - rigid phenolic and polyisocyanurate insulation are closed cell products. This means they can resist both water and moisture ingress and can defy air movement, so will not sag or slump. This ensures they continue to perform over the lifetime of the building, a feature open cell materials can not achieve.

**Damp proof membrane** - is a layer of reinforced heavy gauge polythene used to prevent rising dampness in solid ground bearing floor construction.

**Proprietary insulated vertical DPC cavity closers** - is essentially a strip of insulation with a factory bonded rigid DPC (Damp Proof Course) eg: Kingspan Kooltherm Cavity Closer. Used for window door jams.

**Radon barrier** - is similar to a Damp Proof Membrane but has the additional benefit of preventing the penetration of radon gas into the building. Radon is a naturally occurring radioactive gas which when present and concentrated under an unprotected floor slab can potentially cause adverse health conditions.

**Acceptable detail** - a drawing detail that promotes best building practice typically for junction details such as floor/wall and wall/roof junctions ensuring maximum air tightness and continuity of insulation.

**Sarking felt** - a standard roofing felt which is usually placed over the roof timber structure to provide a waterproofing layer.

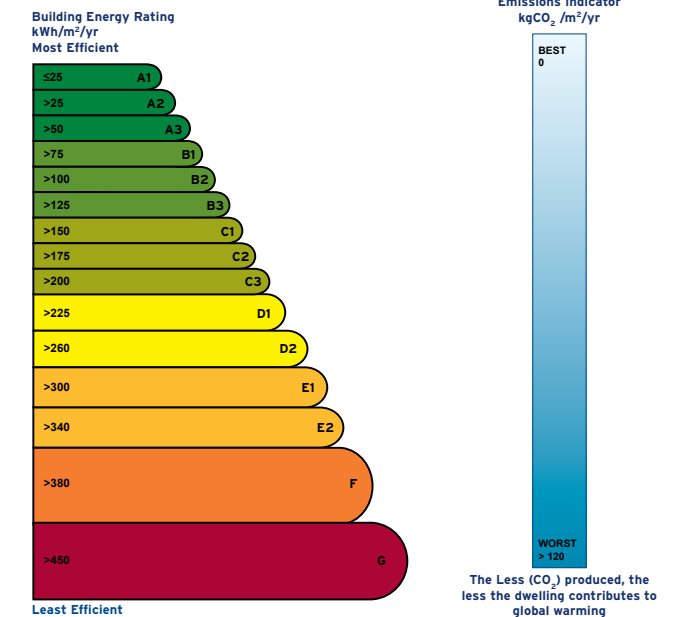
**Thermal bridging** - is where a material or part of a building element has a higher thermal conductivity than the adjacent materials. Its ability to transmit more heat creates a relatively colder surface on which warm moist air will condense. This condensation can potentially cause mould growth and eventual fabric decay.

**Thermal mass** - is the ability of a material to store heat. The amount stored depends primarily on the element's mass ie: concrete or blockwork would have a higher thermal mass than timber. If designed correctly thermal mass can be a means of storing passive solar heat gain which is then released as the building cools down.

**U-Value** - is the rate of heat loss through a construction element per metre squared per degree of temperature difference. Therefore the lower the U-Value the lower the heat loss.

**Vapour control layer** - primarily used to minimise moisture migration through an external building element thereby reducing the risk of condensation occurring within the structure (interstitial condensation). It can also aid the airtightness of the building fabric if properly installed and sealed at junctions.

### BER Chart



The Less (CO<sub>2</sub>) produced, the less the dwelling contributes to global warming

# Summary chart

	0-75 kWh/m <sup>2</sup> /yr <b>A</b>	76-150 kWh/m <sup>2</sup> /yr <b>B</b>	151-225 kWh/m <sup>2</sup> /yr <b>C</b>	226-300 kWh/m <sup>2</sup> /yr <b>D</b>	301-380 kWh/m <sup>2</sup> /yr <b>E</b>	381-450 kWh/m <sup>2</sup> /yr <b>F</b>	>450kWh/m <sup>2</sup> /yr <b>G</b>
<b>External Rendered Insulation System</b> <small>(assuming 25mm EPS internally)</small> U-Value (W/m <sup>2</sup> K) Insulation	0.12 140mm Kooltherm K5 EWB	0.16 100mm Kooltherm K5 EWB	0.25 60mm Kooltherm K5 EWB	0.28 50mm Kooltherm K5 EWB	0.34 40mm Kooltherm K5 EWB	0.40 30mm Kooltherm K5 EWB	0.52 20mm Kooltherm K5 EWB
<b>Internal Dry-lining</b> U-Value (W/m <sup>2</sup> K) Insulation  <small>(Note 1)</small>	0.12 100mm Kooltherm K12 between studs & 92.5mm Kooltherm K17 or K18 fixed to inside of studs	0.16 80mm Kooltherm K12 & 72.5mm Kooltherm K17 or K18	0.27 82.5mm Kooltherm K17 or 72.5mm Kooltherm K18	0.30 72.5mm Kooltherm K17 or 62.5mm Kooltherm K18	0.36 62.5mm Kooltherm K17 or 52.5mm Kooltherm K18	0.43 52.5mm Kooltherm K17 or 42.5mm Kooltherm K18	0.79 25mm TW55 between battens
<b>Solid Ground Floors</b> U-Value (W/m <sup>2</sup> K) Insulation	0.12 140mm Kooltherm K3	0.16 100mm Kooltherm K3	0.23 60mm Kooltherm K3	0.70 none	0.70 none	0.70 none	0.70 none
<b>Cold Pitched Roof</b> U-Value (W/m <sup>2</sup> K) Insulation between rafters Under rafters	0.12 140mm Kooltherm K7 72.5mm Kooltherm K17 or K18	0.14 120mm Kooltherm K7 62.5mm Kooltherm K17 or K18	0.16 100mm Kooltherm K7 62.5mm Kooltherm K17 or K18	0.20 100mm Kooltherm K7 37.5mm Kooltherm K17 or K18	0.29 100mm Kooltherm K7	0.44 60mm Kooltherm K7	0.88 25mm TP10
<b>Warm Pitched Roof</b> U-Value (W/m <sup>2</sup> K) Insulation between rafters Over rafters	0.12 100mm Kooltherm K7 between & 80mm Kooltherm K7 above	0.14 70mm Kooltherm K7 between & 80mm Kooltherm K7 above	0.16 60mm Kooltherm K7 between & 70mm Kooltherm K7 above	0.20 50mm Kooltherm K7 between & 50mm Kooltherm K7 above	0.25 40mm Kooltherm K7 between & 40mm Kooltherm K7 above	0.38 40mm Kooltherm K7 above	0.46 30mm Kooltherm K7 above
<b>Flat Ceilings</b> U-Value (W/m <sup>2</sup> K) Insulation between joists Under joists	0.12 200mm Kooltherm K7 37.5mm Kooltherm K17 or K18	0.14 160mm Kooltherm K7 37.5mm Kooltherm K17 or K18	0.16 180mm Kooltherm K7	0.19 150mm Kooltherm K7	0.27 100mm Kooltherm K7	0.41 60mm Kooltherm K7	0.68 30mm Kooltherm K7
<b>Additional Specification</b> Heating (Oil) (efficiency %) Electrical (Lighting) Electrical (Photovoltaic) Water Heating Glazing/Door U-Value	90 50% CFL 5m <sup>2</sup> 4m <sup>2</sup> Solar Panels 1.10	90 50% CFL No 4m <sup>2</sup> Solar Panels 1.50	90 25% CFL No By Main Heating System 2.10	80 Standard No By Main Heating System 2.10	80 Standard No By Main Heating System 2.10	60 Standard No By Main Heating System 5.00	60 Standard No By Main Heating System 5.00

**Notes:**

1. Assuming K17 is dabbled or fixed directly to wall and K18 is fixed to timber battens or a steel framing system.

NB: These details and specifications have been prepared in support of providing an indication of the requirements to meet the various Energy Ratings. As the rating achieved will vary depending on the shape and size of the dwelling along with other specification options not covered above, they are indicative only and must not be taken as a final specification. A registered BER Assessor should be employed to carry out the necessary calculations to determine the exact requirements for each individual dwelling. Accordingly Kingspan Insulation Ltd accepts no liability for errors, omissions or claims arising from the use of this information.

**CFL** Compact Fluorescent Lighting

**Photovoltaic**

Solar Panels for providing Electricity

**EPS**

Expanded Polystyrene

# External rendered insulation system

This is an ideal system to upgrade the thermal performance of an existing building as all the work is carried out externally. Low U-Values are very easily achieved, even exceeding current building regulations for new build! The roof eaves can be adjusted slightly to take into account the additional depth of insulation and proprietary aluminium cill extensions can be used to dress over the existing concrete cill.

Because insulated render systems are proprietary and utilise different mechanisms for attaching insulation to the wall structure, sitework guidance should be sought from the system manufacturers. However, in the absence of any other guidance Kingspan Kooltherm K5 insulation boards are mechanically fixed to the exterior of masonry external walls using proprietary fixings at a rate of 5No. per board. At least one fixing should be fire rated (ie: steel). The Kooltherm K5 insulation should not continue below the damp proof course, Kingspan Styrozone should be used instead.

This system means the building is effectively wrapped in high performance insulation which maintains the structure at room temperature thereby eliminating cold bridge issues. In addition maximum thermal mass is maintained inside the insulation which will ensure a more even heating regime and allow storage of passive solar heat gain.

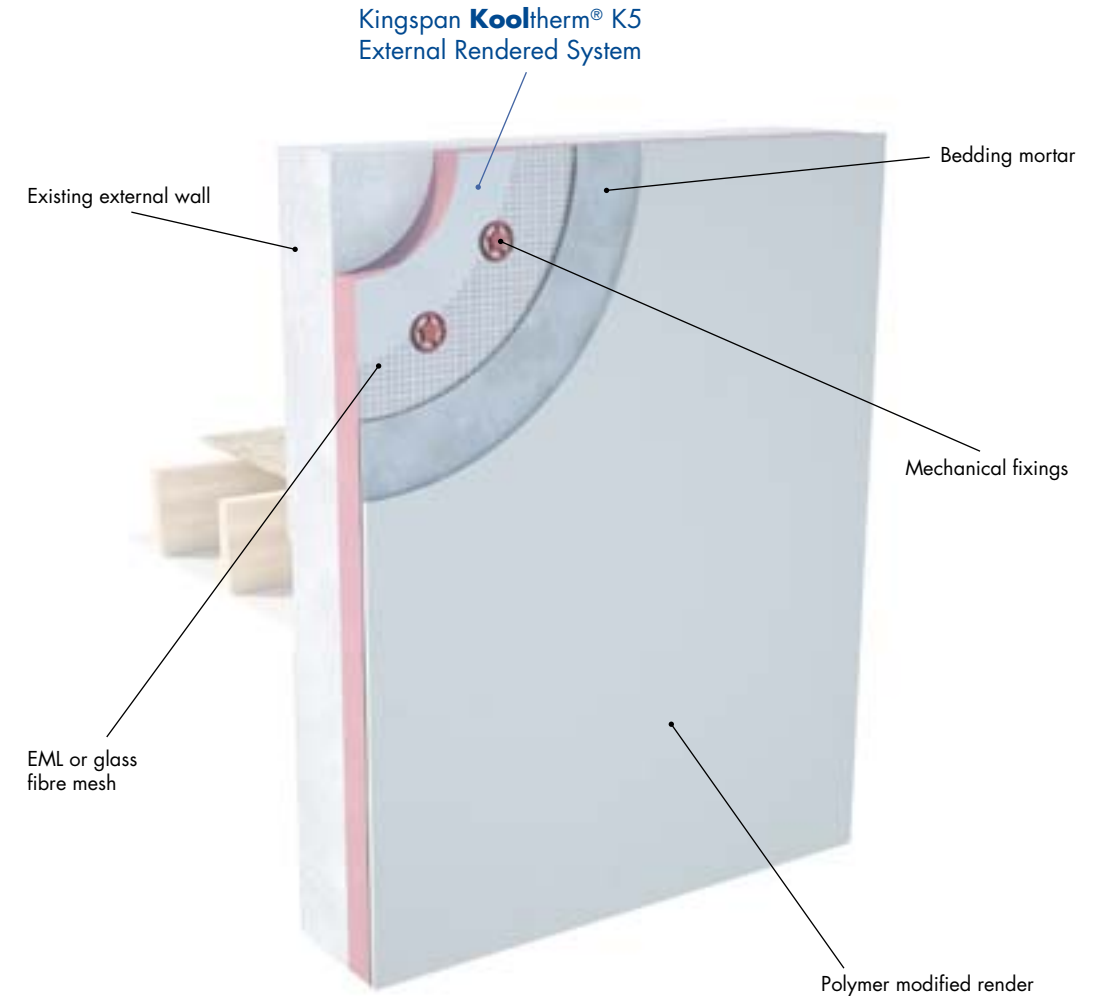
External rendered insulation systems utilise polymer modified renders and the use of standard sand/cement renders are discouraged due to the inflexible nature of the render.

**Do**

Ensure minimum 20mm Kingspan Kooltherm K5 insulation is returned at windows & door jambs.

**Don't**

Use standard sand/cement render over external insulation system.



External Rendered Insulation System	A	B	C	D	E	F	G
U-Value (W/m <sup>2</sup> K)	0.12	0.16	0.25	0.28	0.34	0.40	0.52
Insulation	140mm Kooltherm K5 EWB	100mm Kooltherm K5 EWB	60mm Kooltherm K5 EWB	50mm Kooltherm K5 EWB	40mm Kooltherm K5 EWB	30mm Kooltherm K5 EWB	20mm Kooltherm K5 EWB
<small>(Assuming 25mm EPS internally)</small>							

## Internal dry-lining

Traditionally internal dry-lining has been the preferred method of improving the thermal performance of existing walls. Using premium performance Kingspan Kooltherm K17 or K18 products will ensure the thinnest and most effective solution and will considerably reduce heat loss.

Care must be taken as with any insulation upgrades that the insulation is as continuous as possible to minimise localised thermal bridging. This can be achieved by providing a thin layer of K17 or K18 to the window and door reveals and also returning this insulation for a minimum of 1m where internal block walls join the external wall.

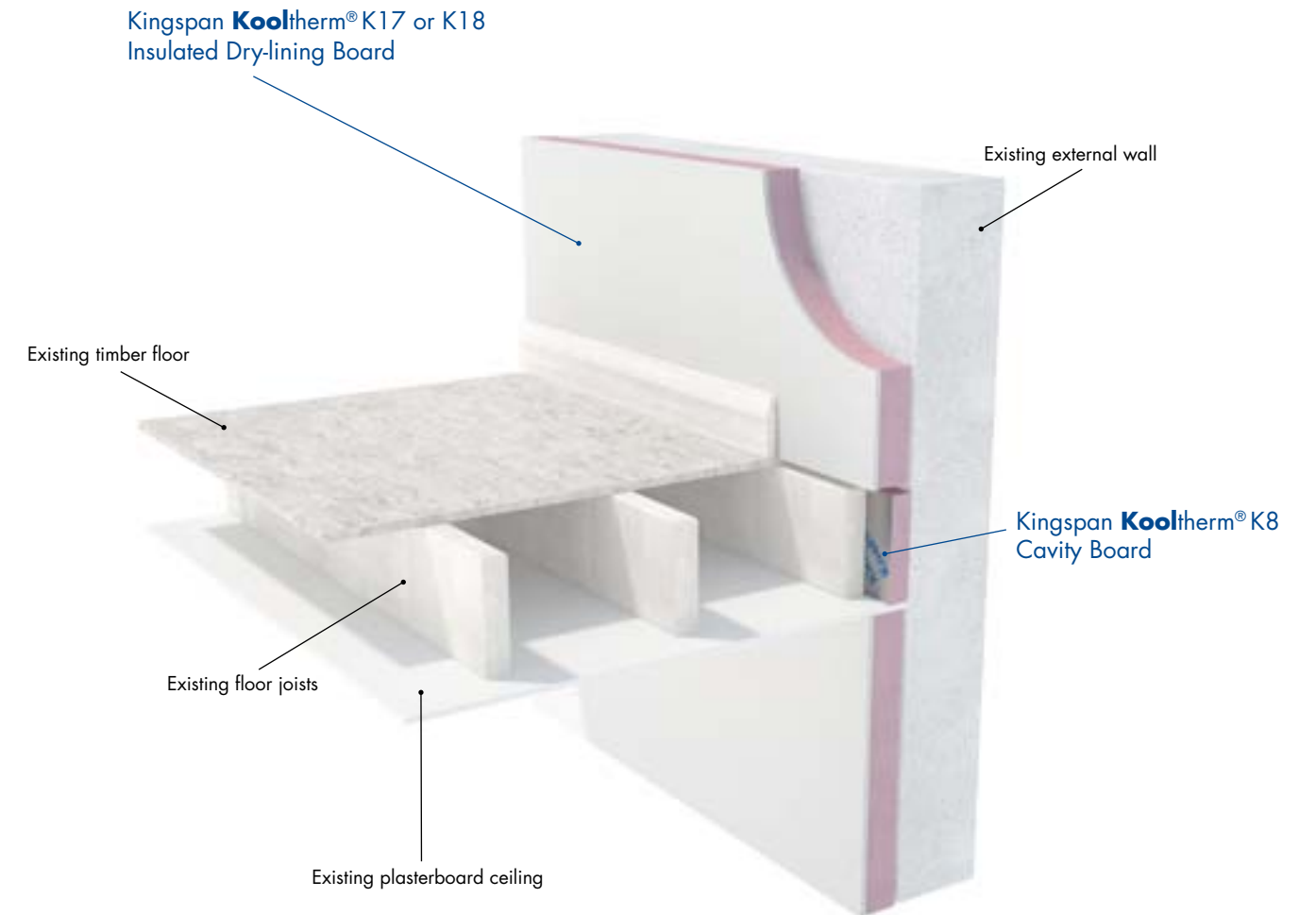
Kingspan Kooltherm K17 is designed for use where it will be dabbed or bonded to the face of the existing wall. This must be supplemented with a minimum of 3No. mechanical fasteners (1No. in centre and one in each top corner of boards). Kooltherm K17 can also be fixed directly to the substrate with mechanical fixings as per the Kooltherm K17 detail brochure, whereas Kooltherm K18 is designed for use where it will be mechanically fixed onto timber battens or a steel framing system.

### Do

Minimise service penetrations.  
Ensure minimum 25mm insulation is returned at window & door jambs.

### Don't

Place a separate vapour control layer between the insulation and existing wall.



Internal Dry-Lining

A

U-Value (W/m<sup>2</sup>K)

0.12

0.16

Insulation

100mm Kooltherm K12 between studs & 92.5mm Kooltherm K17 or K18 fixed to inside of studs

80mm Kooltherm K12 and 72.5mm Kooltherm K17 or K18

B

0.27

82.5mm Kooltherm K17 or 72.5mm Kooltherm K18

C

0.30

72.5mm Kooltherm K17 or 62.5mm Kooltherm K18

D

0.36

62.5mm Kooltherm K17 or 52.5mm Kooltherm K18

E

0.43

52.5mm Kooltherm K17 or 42.5mm Kooltherm K18

F

0.79

25mm TW55 between battens

G

## ➤ Solid ground floor

While insulating the floor of an existing building is a disruptive process it shouldn't be disregarded completely as there are significant benefits in terms of reducing heat loss. Also if part of the remedial work includes plumbing upgrades then it might be prudent to take advantage of this opportunity to provide insulation as the concrete screed will need to be excavated to some extent.

Insulation to required thickness (see chart below) is laid over the damp proof membrane or radon barrier ideally in a 'break bonded' (ie. staggered) pattern. If using two layers of insulation the vertical joints can be staggered to ensure continuity of the insulation (ie. no vertical joints lining up). The insulation should be overlaid with a separation membrane to ensure that wet screed cannot penetrate the joints of the insulation boards (eg. 500 gauge polythene) or builders paper.

A minimum thickness of 25mm of insulation should be placed vertically along the entire perimeter of the external walls to ensure that the screed or concrete slab (if above the insulated layer) does not come into direct contact with the blockwork - this will create an acceptable detail and therefore prevent thermal bridging. Ideally this detail should be adopted for the internal walls also.

For a solid concrete floor the position of the insulation is important in either exposing the thermal mass of the floor to the heat provided by the system or isolating the thermal mass from it. For 24 hour, or long cycle heating systems the thermal mass of the concrete slab will ensure a more even heating regime, therefore it might be beneficial locating the concrete slab over the insulation. For short intermittent heating cycles where a fast response time is required it may

be more beneficial to have less thermal mass and therefore place the insulation directly below the screed.

Suspended timber floors offer an excellent opportunity to provide insulation as this can be either fitted tightly between the existing floor joists or a new solid concrete floor with insulation could be installed instead as outlined above.

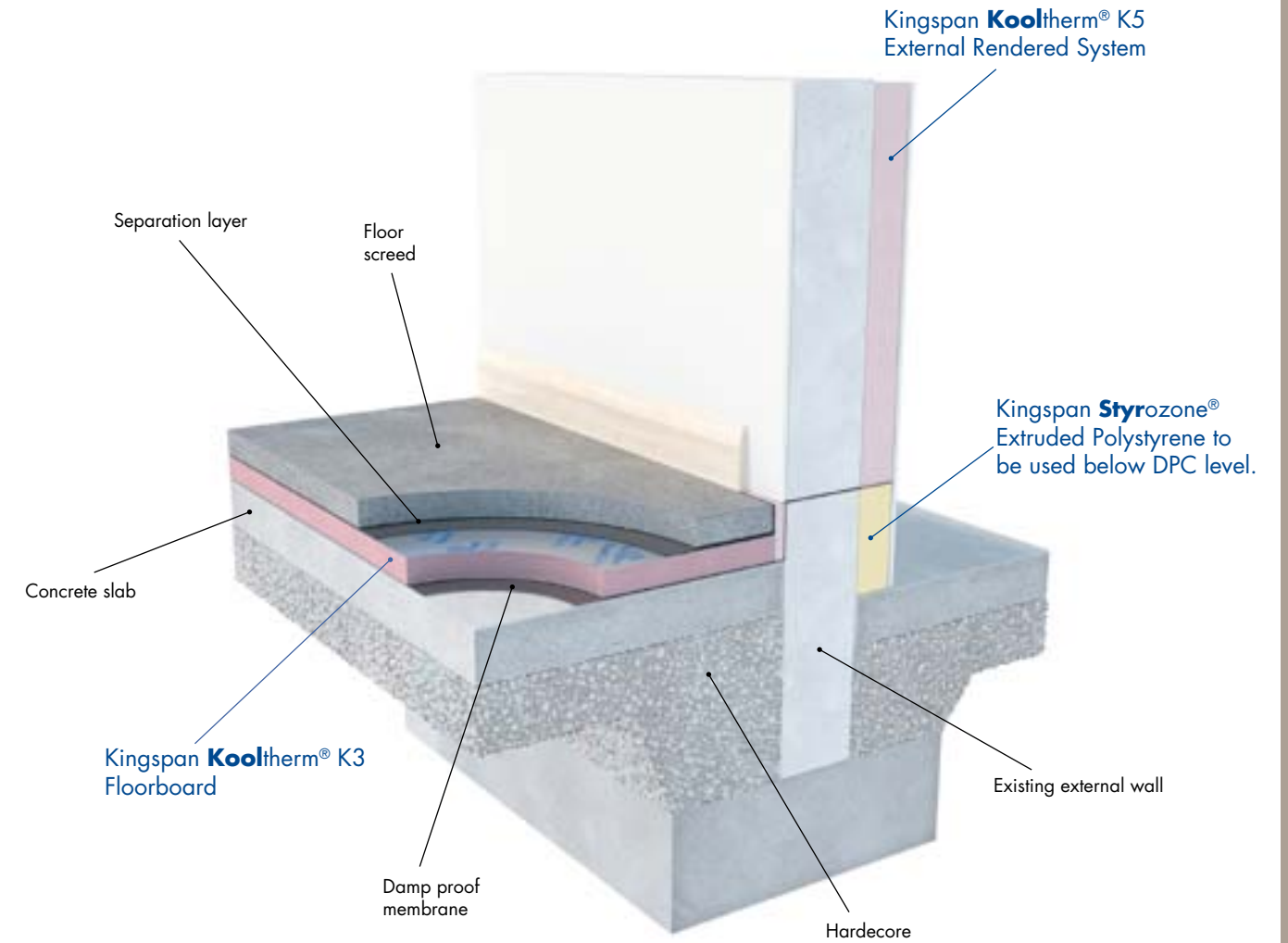
While the insulation is a 'closed cell' material and therefore does not readily absorb moisture it should not be allowed to get wet either in storage or application. Any boards exposed to high moisture levels should be allowed to completely dry off prior to pouring the screed. Any visibly damaged boards should be replaced.

### Do

Ensure a damp proof membrane is laid under the insulation.

### Don't

Allow excessive gaps between insulation - gaps can be filled with expanding urethane foam and then taped over with foil tape.



Solid Ground Floor

A

B

C

D

E

F

G

U-Value (W/m<sup>2</sup>K)

0.12

0.16

0.23

0.70

0.70

0.70

0.70

Insulation

140mm Kooltherm K3

100mm Kooltherm K3

60mm Kooltherm K3

none

none

none

none

## ➤ Cold pitched roof

Insulating an existing sloped ceiling may be achieved by fitting an insulated plasterboard directly to the underside of the existing plasterboard (though fixings will need to project into the existing rafters) but the benefit will be limited due to the restriction in the depth of the insulated plasterboard. Ideally the existing plasterboard should be removed and a new layer of insulation to required thickness (see chart below) is fitted between and under the rafters leaving a minimum 50mm ventilated airspace between the top of the insulation and the underside of sarking felt. Using a Kingspan Plasterboard laminate (Kooltherm K17 or K18) eliminates the need to include an additional vapour check as this is already built into the product.

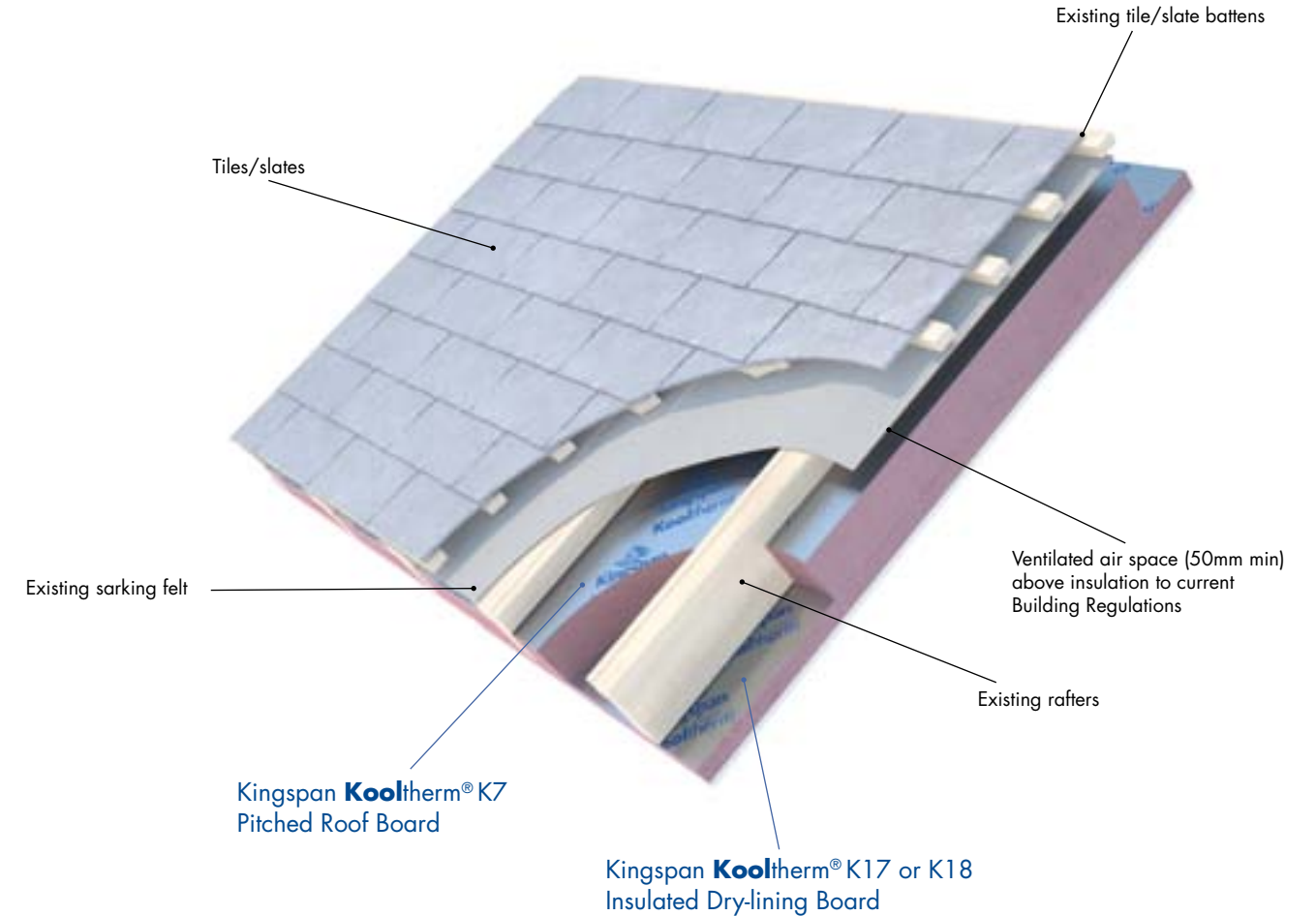
This system is also known as a 'ventilated' roof as traditional ventilation is required at eaves equivalent to 25mm continuous strip and ridge equivalent to 5mm continuous strip. Care should be taken at wall/roof junctions to ensure continuity of the insulation and airtightness.

### Do

Ensure a vapour control layer is provided on the underside of the rafters or use Kingspan Kooltherm K17 or K18, which have a built in vapour control layer.

### Don't

Reduce ventilated airspace below 50mm unless proprietary breathable membrane has been provided.



### Cold Pitched Roof

#### U-Value (W/m<sup>2</sup>K)

#### Insulation between rafters Under rafters

	A	B	C	D	E	F	G
U-Value (W/m <sup>2</sup> K)	0.12	0.14	0.16	0.20	0.29	0.44	0.88
Insulation between rafters Under rafters	140mm Kooltherm K7 72.5mm Kooltherm K17 or K18	120mm Kooltherm K7 62.5mm Kooltherm K17 or K18	100mm Kooltherm K7 62.5mm Kooltherm K17 or K18	100mm Kooltherm K7 37.5mm Kooltherm K17 or K18	100mm Kooltherm K7	60mm Kooltherm K7	25mm TP10

## Warm pitched roof

This particular system will require removal of the existing slates or tiles and therefore may only be feasible when these need to be replaced as part of the remedial works.

Insulation to required thickness (see chart below) is fitted between and over the rafters which is then overlaid with a breathable membrane. A minimum 25mm airspace should be provided immediately over the breathable membrane to ensure adequate functioning of the membrane and to allow a drainage passage under the tiles/slates. This is achieved by fixing counter battens along the line of the rafters.

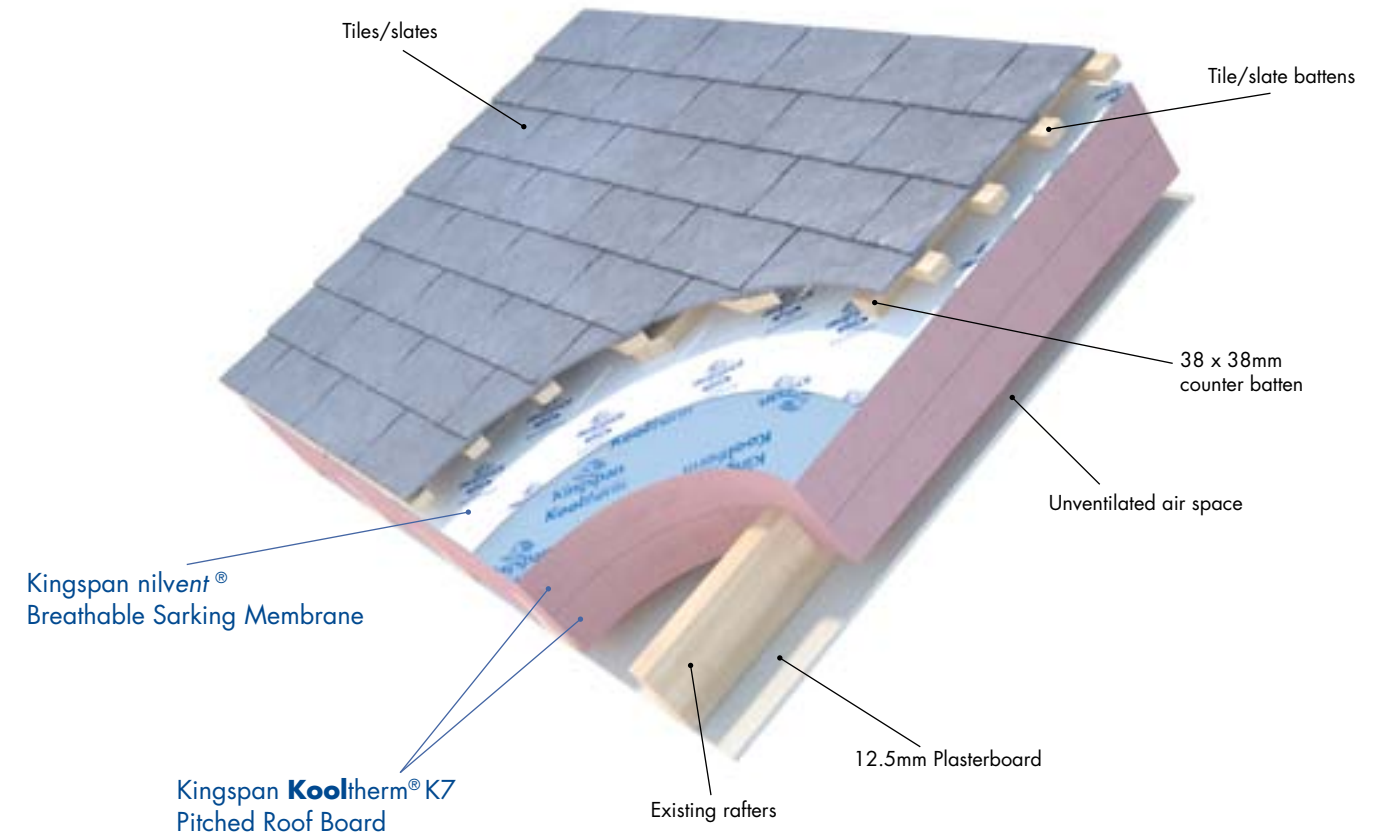
This system is also known as a 'non-ventilated' roof as traditional ventilation at eaves and ridge is not required. Care should be taken at wall/roof junctions to ensure continuity of the insulation and airtightness.

### Do

Take care at wall and roof junctions to ensure continuity of the insulation and airtightness.

### Don't

Use standard sarking felt for this application.



### Warm Pitched Roof

#### U-Value (W/m<sup>2</sup>K)

#### Insulation between rafters Over rafters

	A	B	C	D	E	F	G
U-Value (W/m <sup>2</sup> K)	0.12	0.14	0.16	0.20	0.25	0.38	0.46
Insulation between rafters Over rafters	100mm Kooltherm K7 between and 80mm Kooltherm K7 above	70mm Kooltherm K7 between and 80mm Kooltherm K7 above	60mm Kooltherm K7 between and 70mm Kooltherm K7 above	50mm Kooltherm K7 between and 50mm Kooltherm K7 above	40mm Kooltherm K7 between and 40mm Kooltherm K7 above	40mm Kooltherm K7 above	30mm Kooltherm K7 above

## > Flat ceiling

Insulation to required thickness (see chart below) is tightly fitted between the ceiling joists. Using a Kingspan Plasterboard laminate (Kooltherm K17 or K18) eliminates thermal bridging through the ceiling joists and the need to include an additional vapour check as this is already built into the product.

This system is also known as a 'ventilated' roof as traditional ventilation is required at eaves equivalent to a 10mm continuous strip. Care should be taken at wall/roof junctions to ensure continuity of the insulation and airtightness. Ensure that a minimum 50mm is left between the insulation and the existing sarking felt to facilitate adequate ventilation.

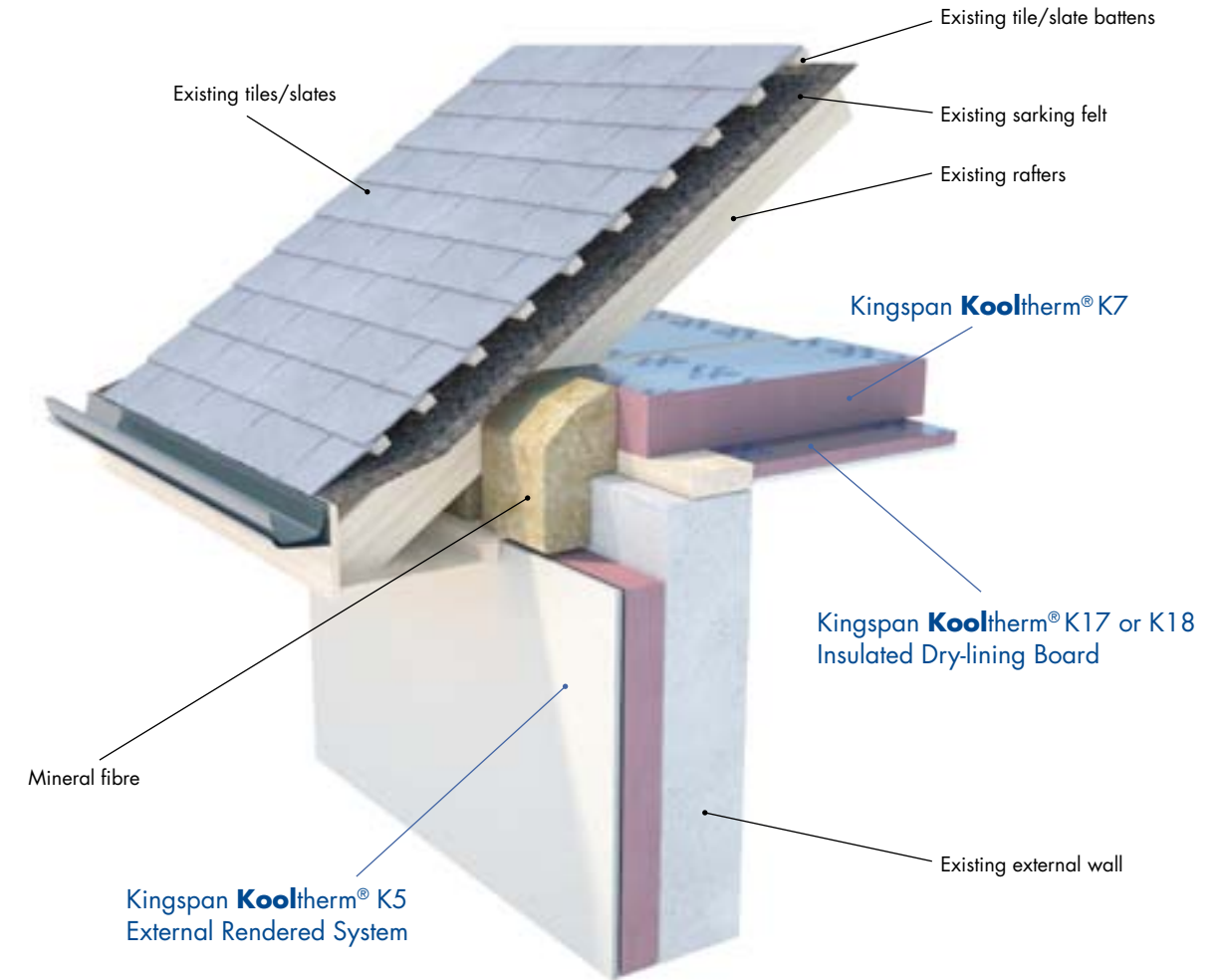
Ensure that electrical wiring is located above insulation (i.e. don't place insulation directly over the existing electrical wiring between the joists). Ensure that attic hatch is insulated and properly fitted for access opening. Ensure that a minimum of 75mm air space is maintained between insulation and spotlights/downlighter fittings.

### Do

Ensure all electrical wiring is relocated above insulation layer.

### Don't

Combine different insulation materials without consulting the Kingspan Technical Advice Department for a detailed condensation risk analysis.

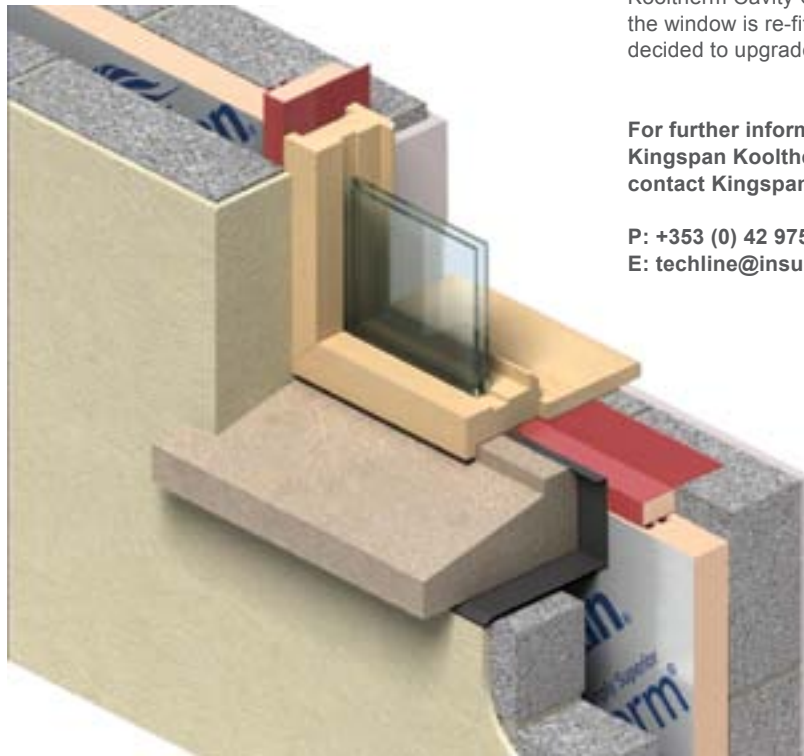


Flat Ceiling	A	B	C	D	E	F	G
U-Value (W/m <sup>2</sup> K)	0.12	0.14	0.16	0.19	0.27	0.41	0.68
Insulation between joists Under joists	200mm Kooltherm K7 37.5mm Kooltherm K17 or K18	160mm Kooltherm K7 37.5mm Kooltherm K17 or K18	180mm Kooltherm K7	150mm Kooltherm K7	100mm Kooltherm K7	60mm Kooltherm K7	30mm Kooltherm K7

## › Closing Cavities

Due to ever more stringent building regulations requiring increased thermal performance, 'weak' points in the building fabric at junctions between floors, walls and roofs are becoming more and more apparent. These are problem areas that need to be addressed by ensuring continuity of insulation and air-tightness to reduce thermal bridging.

This also applies to window and door jambs in traditional cavity wall construction where the internal block leaf returns to meet the external leaf forming a direct thermal bridge. This can cause localised condensation and associated mould growth especially in kitchens, bathrooms, utility rooms and bedrooms due to the relatively cold surface at these junctions.



There are several means of tackling this, the most effective being an external insulation system as discussed on page 08, where a thin layer of insulation returns on the external window or door jamb to encapsulate the building in insulation. An alternative is internally dry-lining where a thin layer of insulation also returns on the window or door jamb thereby eliminating any cold surfaces internally.

However if neither of these options are employed or if the existing wall is adequate in terms of thermal performance then Kingspan Kooltherm Cavity Closer can be used to tackle this junction directly. The process involves removing the existing windows and cutting out the return blockwork to form a clear cavity. An appropriate width of Kingspan Kooltherm Cavity Closer is then secured to the inner leaf and the window is re-fitted, this option is ideal if it has been decided to upgrade the existing windows in the house.

**For further information, or a copy of the Kingspan Kooltherm Cavity Closer brochure simply contact Kingspan Insulation Technical Advice:**

**P: +353 (0) 42 975 4297**  
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