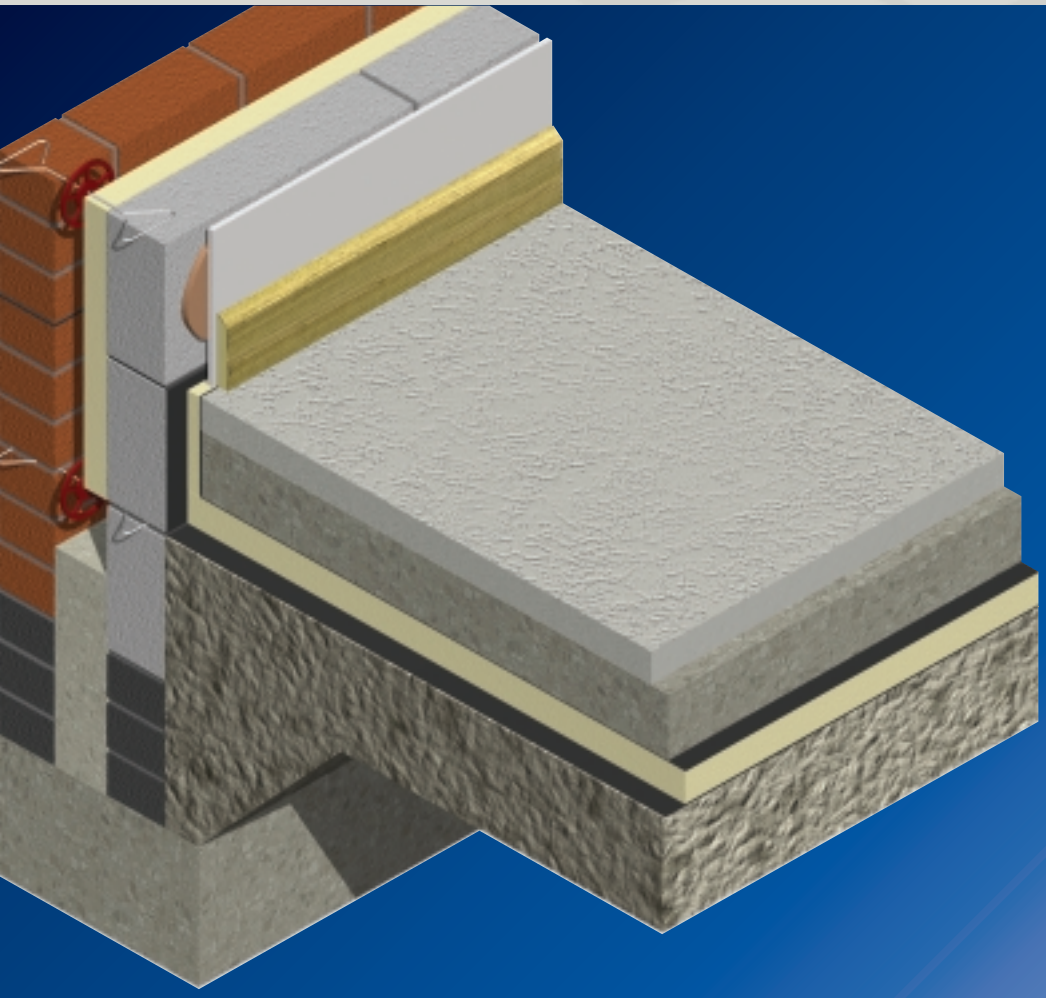
Cl/Sfb Rn7 M2
Fourth Issue November 2005

Thermafloor TF70

INSULATION FOR SOLID CONCRETE AND SUSPENDED GROUND FLOORS



- High performance rigid urethane insulation – thermal conductivity 0.022–0.023 W/m·K
- No requirement for a vapour control layer
- Quick response floor heating – prevents heat loss through 'heat sump'
- Minimises the cost of related items – soil removal, DPM's, service connections
- Resistant to the passage of water vapour
- Easy to handle and install
- Ideal for newbuild and refurbishment
- Non–deleterious material
- CFC/HCFC–free with zero Ozone Depletion Potential (ODP)

zero o.d.p

nilflam

Kingspan® Insulation Solutions

Thermafloor TF70

Typical Design Details

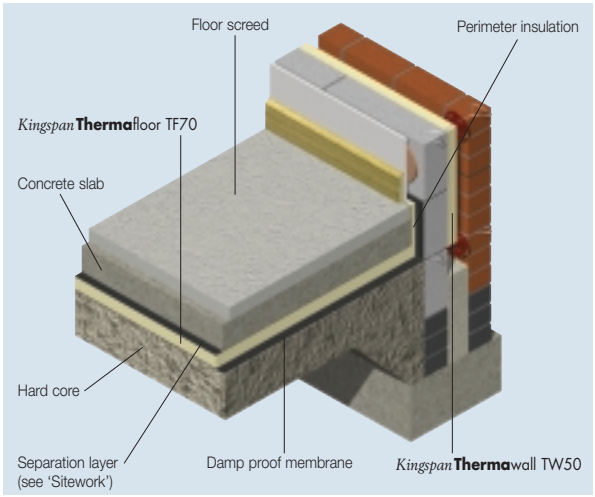


Figure 1 Below the Floor Slab

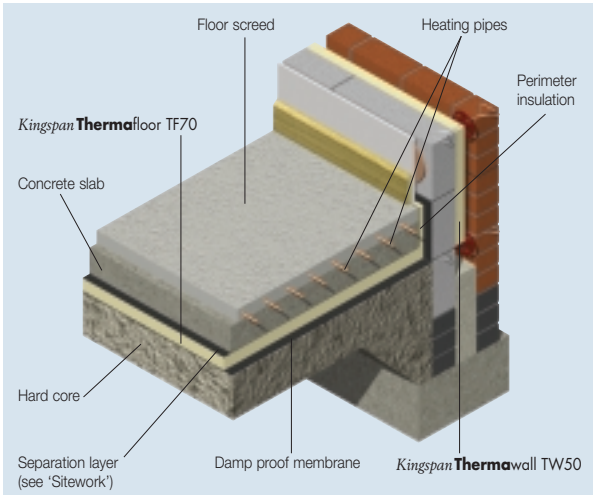


Figure 2 Underfloor Heating – 24 Hour Heating Cycle Applications

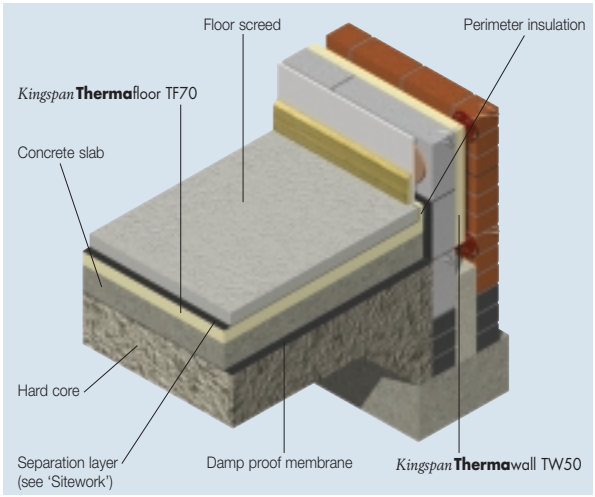


Figure 3 Below the Floor Screed

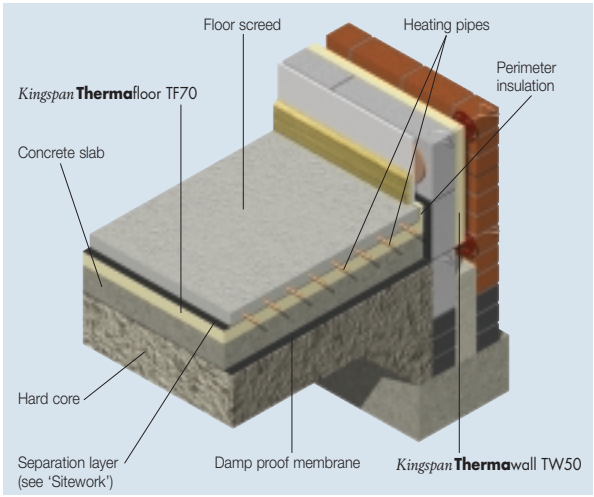


Figure 4 UnderFloor Heating – Intermittent Heating Cycle Applications

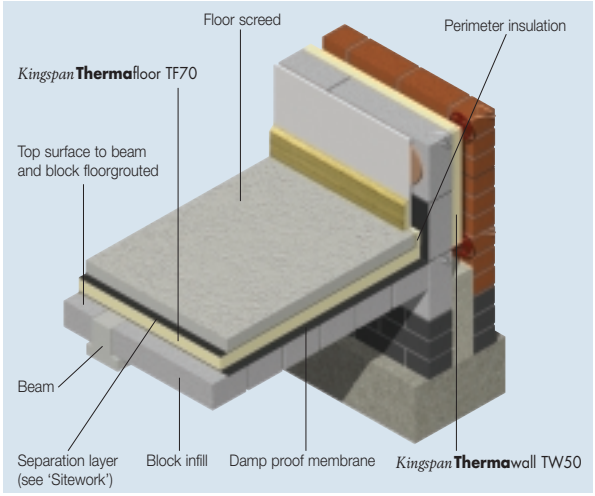


Figure 5 Beam and Block Floor

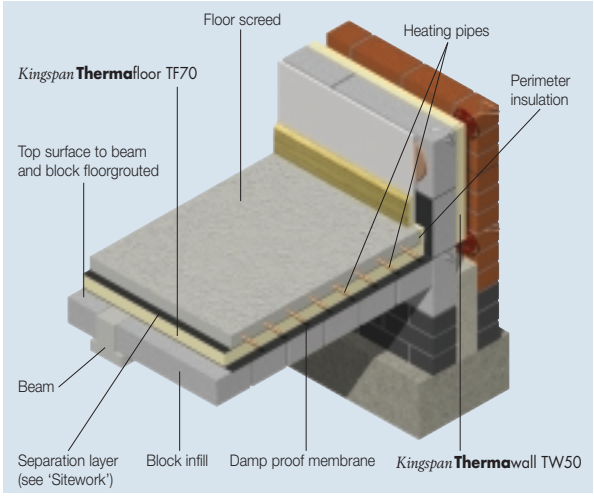


Figure 6 UnderFloor Heating – Intermittent Heating Cycle Applications – Beam and Block Floor

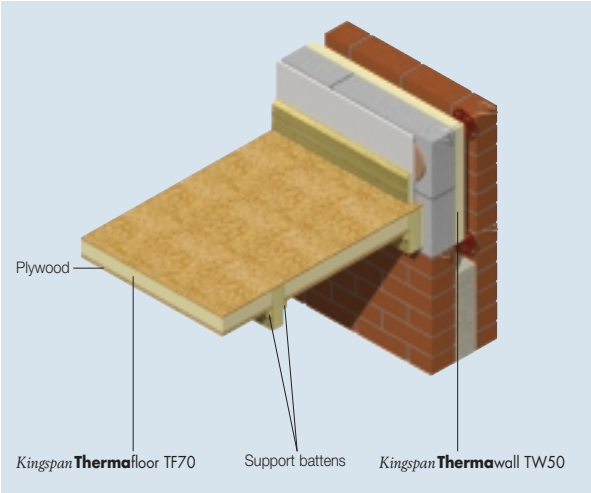


Figure 7 Suspended Timber Floor

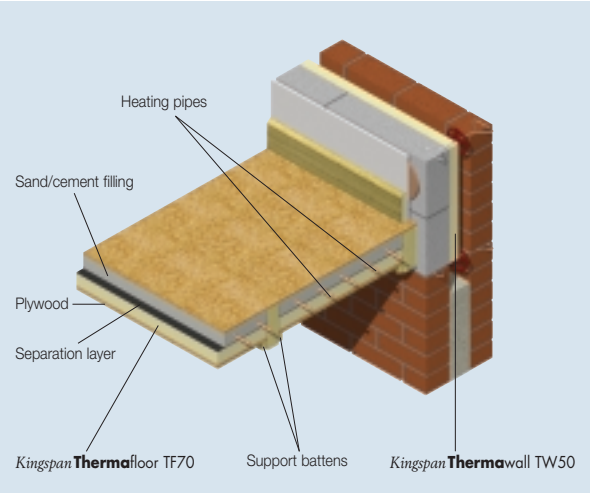


Figure 8 Underfloor Heating – Suspended Timber Floor

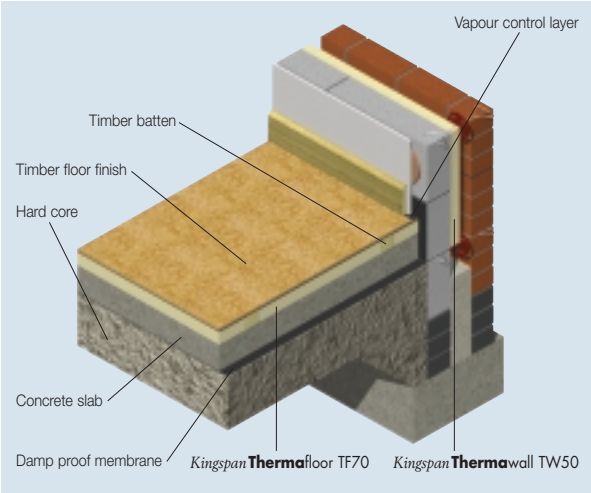


Figure 9 Timber Floor on Battens

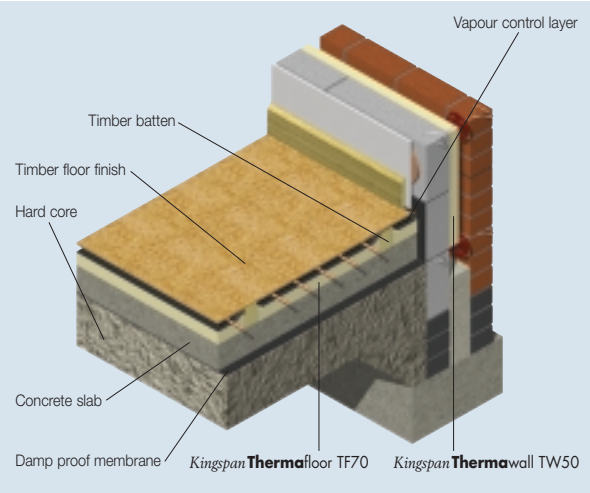


Figure 10 Underfloor Heating – Timber Floor on Battens

Specification Clause

Kingspan **Therma**floor TF70 should be described in specifications as:–

The floor insulation shall be *Kingspan* **Therma**floor TF70 ____mm thick comprising a CFC/HCFC–free rigid urethane insulation core with low emissivity composite foil facings on both sides manufactured to the highest standards in accordance with the requirements of draft BS 4841–6 under quality control systems approved to BS EN ISO 9001: 2000/I.S. EN ISO 9001: 2000 by Kingspan Insulation Limited and shall be applied in accordance with the instructions issued by them.

Details also available in NBS PLUS.
NBS users should refer to clause(s):
E20 200 (Standard and Intermediate)
E20 30 (Minor Works)

Design Considerations

Sustainability

In the past, erroneously, the relative environmental sustainability of insulation materials has been compared on the basis of embodied energy and ozone depletion potential. It is now recognised that a much wider basket of embodied environmental impacts (including those caused by their embodied energy), rather than embodied energy alone, is the only credible tool of comparison. Time has also annulled ozone depletion potential as an issue as all insulation materials are now banned from using CFC and HCFC blowing agents by law.

Thermafloor TF70

For buildings designed to today's Building Regulations energy use standards it is now also known that the embodied environmental impacts of all of the materials and labour used to create a building are insignificant in comparison with the lifetime operational environmental impacts of that building and so are of very limited importance. Since it is operational energy use that creates the vast majority of operational environmental impact, saving energy by specifying the lowest U-values possible is the most environmentally sustainable action to take.

However, one of the most neglected facts about environmentally sustainable buildings is that the longevity of their standards of operational energy use, and therefore the longevity their operational environmental impacts, is critical. The performance of some insulants, such as mineral fibre, can deteriorate rapidly if exposed to water penetration, air movement or compression. This may increase operational energy use and hence compromise the environmental sustainability of the finished building to an alarming degree. Other insulation materials, such as rigid phenolic or rigid urethane, are not vulnerable to any of these problems.

In summary, designers should:

(a) specify the lowest possible U-value regardless of insulation type;

(b) design out the risk of their chosen insulant not performing as specified; and (c) if the latter is not possible, choose an insulant that is at low risk of failure e.g. a cellular plastic insulation material.

However, manufacturers should not rest on their laurels, it is a matter of social responsibility to be open and honest about the environmental impact of the manufacture of a product, and a full Life Cycle Analysis (LCA) based on a much wider basket of environmental impacts, rather than embodied energy alone, is recognised as the preferred tool to achieve this.

Kingspan Insulation was the first insulation manufacturer to complete and openly publish an independently certified Ecoprofile (a type of LCA) on one of its product ranges. The Ecoprofile was carried out on the Therma zero ODP range of rigid urethane insulation products by the Building Research Establishment (BRE). The product range comfortably achieves a BRE Green Guide A rating.

But there is far more to sustainability than whether or not a product, process or company affects the environment in a positive or a negative way. A company can and should demonstrate its financial viability and social responsibility, as well as ensure that its materials and methods do not add unduly to the burden placed on the planet.

Kingspan Insulation has now put the manufacture of its products at its Pembridge facility in Herefordshire through a rigorous independent appraisal of its economic, social, environmental and natural resource impacts using Arup's SPeAR® tool.

The results show a well balanced performance in terms of sustainability, and that Kingspan Insulation is already meeting legislation or best practice in most areas, even moving beyond best practice in some. Kingspan Insulation is the first and only construction material manufacturer to have taken this bold move and openly publish the results.

General

Consideration should be given to the recommendations of CP 102: 1973 (Code of practice for protection of buildings against water from the ground) and the information given in Building Research Establishment Digests numbers, 104 (Floor Screeds), and 145 (Heat Losses Through Ground Floors).

Un–reinforced floor screeds can be used in conjunction with *Kingspan* **Therma**floor TF70 in most applications. The compressive strength of *Kingspan* **Therma**floor TF70 offers considerable advantages over some historically more popular floor insulants. Providing a minimum compressive strength of 140 kPa at 10% compression allows greater floor loads to be considered and therefore additional scope in the use of *Kingspan* **Therma**floor TF70. However, where floor loads are to be excessive, consideration should be given to the use of *Kingspan* **Styro**zone® extruded polystyrene insulation which offers far greater compressive strength characteristics. For further information please contact the Kingspan Insulation Technical Services Department (see rear cover).

Where *Kingspan* **Therma**floor TF70 is to be laid over a site fabricated concrete slab, the floor slab should be allowed to dry out fully prior to the application of *Kingspan* **Therma**floor TF70. For those applications where the insulation and DPM is below the slab, construction water should be allowed to dry out, e.g. by delaying the installation of the floor finish.

Surface condensation is unlikely to occur on the floor surface if the *Kingspan* **Therma**floor TF70 is laid over the slab due to the fast thermal response of the construction.

Kingspan **Therma**floor TF70 is not recommended for use in direct contact with subsoil and must be used over the DPM. The surface of slabs should be smooth and free of projections. Beam and block floors should level and grouted. Rough cast slabs should be levelled using a thin sand blinding to ensure boards are continuously supported.

Underfloor Heating Systems

The constructions shown in Figures 1,3, 5, 7 & 9 can be readily converted to accommodate underfloor heating systems.

For a solid concrete floor, the position of the insulation is important in either exposing the thermal mass of the concrete floor to the heat provided by the system or isolating the thermal mass from it.

For a 24 hour heating cycle, allowing the heat from the underfloor heating system to penetrate the concrete slab will provide a more even heating regime over a 24 hour period (see figure 2).

For intermittent heating cycles where a fast response time is required it is beneficial to have less thermal mass available to take up heat from the system and so placing the insulation layer below the screed or timber floor but above the concrete slab or beam and block floor is the best solution (see figures 4, 6 and 10).

Underfloor heating systems can also be accommodated in suspended timber floors. This arrangement has low thermal mass and so is more suited to intermittent heating cycle applications (see figure 8).

Heat Loss

It has been well documented that heat loss through a ground floor consists of two components:

(a) heat loss through the floor perimeter, which is proportional to the length of perimeter and the temperature difference between inside and outside;

(b) heat loss through the ground which depends on the temperature difference between inside and outside and the overall floor area.

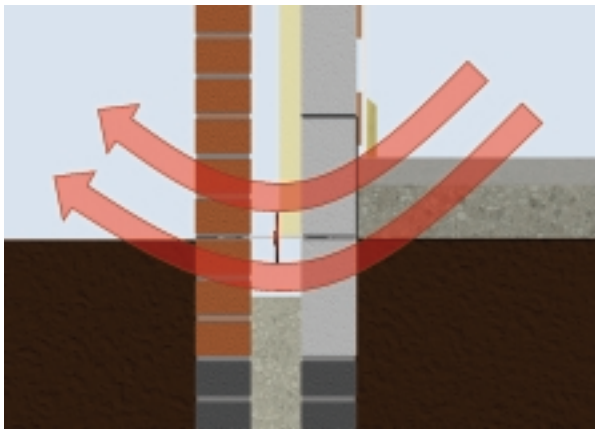


Figure 11 Heat Flow Through Slab

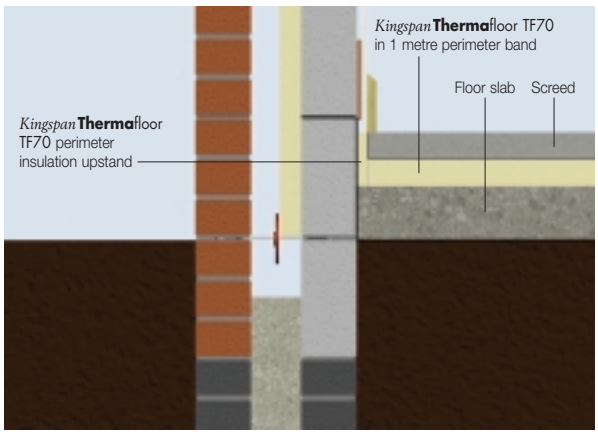


Figure 12 Perimeter Insulation

The greatest heat loss through an uninsulated floor is from the edges (Figure 11). Insulating the floor perimeter in a 1 metre band (Figure 12), will not only provide good insulating results but will also prevent the risk of cold bridging at the junction of the floor and external wall.

The thermal performance of an uninsulated domestic floor slab, however is relatively poor. To enhance the thermal performance, complete rather than perimeter insulation may need to be adopted in domestic floor constructions.

Complete floor insulation offers significant advantages over perimeter insulation when considering the floor dimensions of typical dwellings, e.g. it provides quick response to heating.

Typical U–values

U–value calculations

Unlike roofs, walls and intermediate floors, U–value calculations for ground floors cannot be calculated in the normal manner with reference to the construction detail alone. Heat loss from ground floors depends upon the ratio of exposed floor perimeter to total floor area.

Dimensions for floors should be measured between finished internal faces of external elements of the building, including projections. With semi–detached, terraced buildings etc. the floor dimensions can be taken either as the premises themselves, or the whole building. Where extensions to existing buildings are necessary, the floor dimensions can be taken as those of the entire building, including extension, or the extension alone.

Unheated spaces outside the insulated fabric, such as attached garages or porches, should be excluded when determining the area but the length of the wall between the heated building and the unheated space should be included when determining the perimeter.

The table below has been derived from the (U_0) uninsulated ground floor U–value equation.It applies to all types of uninsulated floors constructed next to the ground including slab–on–ground, concrete raft, suspended timber and beam–and–block.

U–values of Uninsulated Floors

Perimeter/Area Ratio $\frac{P\ (m)}{A\ (m^2)}$	U–value ($W/m^2 \cdot K$)
0.1	0.21
0.2	0.36
0.3	0.49
0.4	0.61
0.5	0.73
0.6	0.82
0.7	0.91
0.8	0.99
0.9	1.05
1.0	1.10

To establish the U–value for intermediate P/A ratios linear interpolation can be used as an alternative to calculation.

Should the U–value of the uninsulated floor be worse than that required, an additional layer of insulation may be required.

Easy Guide to U-values Using *Kingspan* **Therma**floor TF70

All of the U–values shown below were calculated using the method that is detailed in BS/I.S. EN ISO 13370: 1998 (Thermal performance of buildings. Heat transfer via the ground. Calculation methods) which is required for compliance with Building Regulations /Standards revised after the year 2002.

BS/I.S. EN ISO 13370: 1998 (Method) – U–values were calculated using the method which has been adopted to bring National standards in line with the European Standard calculation method. BS/I.S. EN ISO 13370: 1998 details methods for the calculation of U–values for solid and suspended ground floors, solid ground floors with edge insulation and basements.

NB for the purposes of these calculations using the method as detailed in BS/I.S. EN ISO 13370: 1998, the soil has been assumed to be clay or silt, the wall insulation is assumed to overlap the floor insulation by 200 mm minimum and the standard of workmanship has been assumed good and therefore the correction factor for air gaps has been ignored.

The figures quoted are for guidance only. A detailed U–value calculation together with a condensation risk analysis should be completed for each individual project. Please call the Kingspan Insulation Technical Services Department for assistance (see rear cover).

Solid Concrete Ground Floor

These examples are valid for all dense concrete ground floor types with continuous *Kingspan* **Therma**floor TF70 and no thermal bridging. If your construction is any different, please contact the Kingspan Insulation Technical Services Department (see rear cover).

U–Value ($W/m^2 \cdot K$)	Thickness of *Kingspan* **Therma**floor TF70 Required (mm) Combined Method Perimeter/Area Ratio (m^{-1})									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.70						20	20	20	20	20
0.60					20	20	20	20	20	20
0.37			20	20	30	30	35	35	40	40
0.25		25	40	50	55	60	65	65	70	70
0.22		30	50	60	65	70	75	80	80	80

Beam & Dense Block Floor

These examples are valid for all dense concrete ground floor types with continuous *Kingspan* **Therma**floor TF70 and no thermal bridging. If your construction is any different, please contact the Kingspan Insulation Technical Services Department (see rear cover).

U–Value ($W/m^2 \cdot K$)	Thickness of *Kingspan* **Therma**floor TF70 Required (mm) Combined Method Perimeter/Area Ratio (m^{-1})									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.70						20	20	20	20	20
0.60				20	20	20	20	20	20	20
0.37		20	20	25	30	35	35	35	40	40
0.25	20	35	50	55	60	60	65	65	65	70
0.22	20	50	60	65	70	75	75	80	80	80

Suspended Timber Ground Floor

These examples are based on the use of *Kingspan* **Therma**floor TF70 between 50 mm wide joists at 400 mm centre overlain with 18 mm chipboard. If your construction is any different, please contact the Kingspan Insulation Technical Services Department (see rear cover).

U–Value ($W/m^2 \cdot K$)	Thickness of *Kingspan* **Therma**floor TF70 Required (mm) Combined Method Perimeter/Area Ratio (m^{-1})									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.70						20	20	20	20	20
0.60				20	20	20	20	20	20	20
0.37		20	25	35	40	45	50	50	55	55
0.25	20	50	70	80	85	90	95	95	100	100
0.22	20	70	90	100	105	110	110	115	115	120

Timber Floor on Battens

These examples are based on the use of *Kingspan* **Therma**floor TF70 between 50 mm wide battens at 600 mm centres overlain with 18 mm chipboard. If your construction is any different, please contact the Kingspan Insulation Technical Services Department (see rear cover).

U–Value ($W/m^2 \cdot K$)	Thickness of *Kingspan* **Therma**floor TF70 Required (mm) Combined Method Perimeter/Area Ratio (m^{-1})									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.70						20	20	20	20	20
0.60					20	20	20	20	20	20
0.37			20	30	35	40	45	50	50	55
0.25		30	55	65	75	80	85	90	90	95
0.22		45	70	80	90	95	100	105	105	110

Sitework

Laying Below the Floor Slab

After the site has been prepared and foundations where appropriate built to damp proof course level the damp proof membrane (minimum 300 micron/ 1200 gauge polythene) should be laid over the well compacted hard–core, sand blinded, with joints well lapped and folded to prevent the passage of ground water. The membrane should be brought up the surrounding foundation walls until it is sufficiently above the height of the wall damp proof course so that it will connect with or form the DPC. The *Kingspan* **Therma**floor TF70 insulation should be laid break–bonded with the joints lightly butted. A strip of the boarding should be placed vertically around the perimeter of the floor slab in order to prevent cold bridging of the slab. Boards are overlaid with a separating layer of building paper to BS 1521: 1972 (1994) (Specification for waterproof building papers), Grade B1F or polythene sheet (not less than 125 micron/500 gauge). The subsequent application of the concrete slab and screed or other flooring material is similar to those laid over an un–insulated floor (see Figure 1).

Laying Below the Floor Screed

Kingspan **Therma**floor TF70 is simply laid loose over the concrete floor slab or beam and block floor with the necessary water and vapour proof protection. Board joints should be tightly butted, staggered, and laid to a break–bonded pattern. The floor slab should be uniformly flat without steps or gaps to provide continuous bearing support to the *Kingspan* **Therma**floor TF70. Beam and block floors should be level and grouted. A thin section of board should be used around the perimeter of the floor area being insulated. This should be placed vertically against the abutting wall so that it connects with the insulation laid over the slab and protects the edge of the screed, so preventing cold bridging of the floor screed. Boards are overlaid with a separating layer of building paper to BS 1521: 1972 (1994) (Specification for waterproof building papers), Grade B1F or polythene sheet (not less than 125 micron/500 gauge) between the screed and the *Kingspan* **Therma**floor TF70 to prevent the wet screed penetrating joints between the boards. Use a sand and cement screed laid to a minimum thickness of 65 mm for domestic construction and 75 mm elsewhere (see Figure 3).

Laying in Suspended Timber Floors

The application of *Kingspan* **Therma**floor TF70 in suspended floor constructions should be carried out before commencement of floor boarding. *Kingspan* **Therma**floor TF70 should be cut to fit snugly between joists. It should be supported on softwood timber battens, proprietary galvanised steel saddle clips or galvanised nails partially driven into the side of the joists. Battens/nails should be placed at an appropriate height to suit the thickness of board being employed and nails should remain 40 mm proud of the joist. The boards should then be laid between the joists so that they are supported by the battens/nails. Any narrow gaps between a joist and perimeter wall should be insulated by specially cut pieces of board.

They should be supported on blocks nailed to the underside of the joists. Where water services, including central heating pipes, run below the floor boards the location of the *Kingspan* **Therma**floor TF70 insulation can be lowered to create an insulated duct for the services. Access from beneath the floor may later be obtained by removal of the nail supports, from the underside (see Figure 7). *Kingspan* **Therma**floor TF70 is not suitable for battens placing over timber joists.

Laying Between Battens Under a Timber Floor

The subfloor should be level and flat. *Kingspan* **Therma**floor TF70 should be cut to fit snugly between battens. Any narrow gaps between battens and perimeter wall should be insulated by specially cut pieces of board. Board joints should be tightly butted.

Underfloor Heating Systems

Please refer to the instructions of the specific underfloor heating system manufacturer.

Cutting
Cutting should be carried out using a fine toothed saw, or sharp knife and snapping the board over a straight edge and cutting the foil facing on the other side. Ensure accurate trimming to achieve close butting joints and continuity of insulation.

Availability
Kingspan **Therma**floor TF70 is available through specialist insulation distributors and selected builders merchants throughout the UK, Ireland and Europe.

Packaging
The boards are supplied in labelled packs shrinkwrapped in polythene.

Storage
The packaging of *Kingspan* **Therma**floor TF70 should not be considered adequate for long term outside protection. Boards should be stored inside a building. If, however, outside storage cannot be avoided, the boards should be stacked clear of the ground, and covered with a polythene sheet or weatherproof tarpaulin. Boards 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 leaflet on this topic which satisfies the requirements set out in the Control of Substances Hazardous to Health Regulations, 1988 (COSHH) is available from the Kingspan Insulation Marketing Department (see rear cover).

Please note that the reflective surface on this product is designed to enhance its thermal performance. As such, it will reflect light as well as heat, including ultraviolet light. Therefore, if this board 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 facing used on this product can be slippery underfoot 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 board unless it is fully supported by a load bearing surface.

Product Description

The Facings
Kingspan **Therma**floor TF70 is faced on both sides with a low emissivity composite foil autohesively bonded to the insulation core during manufacture.

The Core
The core of *Kingspan* **Therma**floor TF70 is manufactured from trademarked **Nil**flam® technology (a high performance CFC/HCFC–free polyisocyanurate (PIR) based formulation). *Kingspan* **Therma**floor TF70 has a typical density of 32 kg/m^3.

CFC/HCFC–free
Kingspan **Therma**floor TF70 is manufactured without the use of CFCs/HCFCs and has zero Ozone Depletion Potential (ODP).

zero O.D.P

Product Data

Standards and Approvals
Kingspan **Therma**floor TF70 is manufactured to the highest standards in accordance with draft BS 4841–6 (Rigid Polyurethane (PUR) and Polyisocyanurate (PIR) products for building end–use applications. Specification for laminated insulation boards for floors). *Kingspan* **Therma**floor TF70 is manufactured to the highest standards under a quality control system approved to BS EN ISO 9001: 2000/I.S. EN ISO 9001: 2000 (Quality Management Systems. Requirements).

Manufactured to BS EN ISO 9001: 2000
Certificate No. 388

I.S. EN ISO 9001: 2000
Registration No. 19.0633

Standard Dimensions
Kingspan **Therma**floor TF70 is available in the following standard sizes and thicknesses:

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

Insulation Compressive Strength
Typically exceeds 140 kPa at 10% compression when tested to BS EN 826: 1996 (Thermal insulating products for building applications. Determination of compression behaviour).

Water Vapour Resistance

Modified to include board facings, the boards achieve a resistance greater than 100 MN·s/g when tested in accordance with BS 4370–2: 1993 (Methods of test for rigid cellular materials. Methods 7 to 9). *Kingspan* **Therma**floor TF70 should always be installed over a separate damp proof membrane (minimum 1200 gauge).

Durability

If correctly applied, *Kingspan* **Therma**floor TF70 has an indefinite life. Its durability depends on the supporting structure and floor finish 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 spilled 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* **Therma**floor TF70 resist attack by mould and microbial growth and do not provide any food value to vermin.

Fire Performance

Kingspan **Therma**floor TF70 boards when subjected to British Standard fire tests, will vary, depending on the particular application.

Test	Result
BS 476–7:1997 (Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products)	Class 1 rating

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

Thermal Properties

The λ–values and R–values quoted are in accordance with the Harmonised European Standard BS EN 13165: 2001 (Thermal insulation products for buildings – Factory made rigid polyurethane foam (PUR) products – Specification) using so called 90/90 principles. Comparison with alternative products may not be appropriate unless the same procedures have been followed.

Thermal Conductivity

The boards achieve a thermal conductivity (λ–value) of 0.022 W/m·K (insulant thickness ≤ 30 mm) 0.023 W/m·K (insulant thickness ≥ 35 mm).

Thermal Resistances

Thermal resistance (R–value) varies with thickness and is calculated by dividing the thickness of the board (expressed in metres) by its thermal conductivity.

Insulant Thickness (mm)	Thermal Resistance (m^2·K/W)
20	0.90
25	1.10
30	1.35
35	1.50
40	1.70
45	1.95
50	2.15
55	2.35
60	2.60
65	2.80
70	3.00
75	3.25
80	3.45
85	3.65
90	3.90
95	4.10
100	4.30
105	4.55
110	4.75
115	5.00
120	5.20

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

Kingspan Insulation

Kingspan Insulation offers an extensive range of premium and high performance insulation products, breathable membranes and pre–fabricated/ pre–insulated systems for the construction industry. Following an extensive investment programme, Kingspan Insulation is continuing to lead the insulation industry by manufacturing its insulation products with zero Ozone Depletion Potential (ODP) and quoting thermal performance data in accordance with the new harmonised European Standards.

Kingspan Insulation Limited specialise in the solution of insulation problems. The Kingspan Insulation range of insulation products meet the exacting requirements of the construction industry are produced to the highest standards, including BS EN ISO 9001: 2000/I.S. EN ISO 9001: 2000. Each product has been designed to fulfil a specific need and has been manufactured to precise standards and tolerances.

Insulation for:

- Pitched Roofs
- Flat Roofs
- Cavity Walls
- Timber and Steel Framing
- Externally Insulated Cladding Systems
- Floors
- Soffits

Solutions:

- Insulated Dry Lining
- Tapered Roofing Systems
- *Kingspan* **Kool**Duct® Pre–Insulated Ducting
- *Kingspan* **nilvent**® Breathable Membranes

The Kingspan Insulation Product Range

The *Kingspan* Kooltherm® **K–range**

- With a thermal conductivity of 0.021–0.024 W/m·K CFC/HCFC–free rigid phenolic insulation is the most thermally efficient insulation product commonly available.
- Utilises the thinnest possible insulation board to achieve required U–values.
- Fire performance can be equivalent to mineral fibre.
- Achieves a Class O fire rating to the Building Regulations and Low Risk rating for the Technical Standards in Scotland.
- Achieves the best possible rating of < 5% smoke obscuration when tested to BS 5111: Part 1: 1974.
- CFC/HCFC–free with zero Ozone Depletion Potential (ODP).

The *Kingspan* **Therma Range**

- With a thermal conductivity of 0.022–0.028 W/m·K CFC/HCFC–free rigid urethane insulation is one of the most thermally efficient insulation products commonly available.
- Easily achieves required U–values with minimum board thickness.
- Achieves the required fire performance for the intended application.
- CFC/HCFC–free with zero Ozone Depletion Potential (ODP).

The *Kingspan* Styrozone® **& Purlcrete Ranges**

- Rigid extruded polystyrene insulation (XPS) has the highest compressive strength of any commonly available insulant.
- Ideal for specialist applications such as inverted roofing and heavy–duty flooring.
- Easily achieves required U–values with minimum board thickness.
- Achieves the required fire performance for the intended application.
- CFC/HCFC–free with zero Ozone Depletion Potential (ODP).

All Products

- Their closed cell structure resists both moisture and water vapour ingress – problems which can be associated with open cell materials such as mineral fibre and which can result in reduced thermal performance.
- Unaffected by air movement – problems that can be experienced with mineral fibre and which can reduce thermal performance.
- Safe and easy to install – non–fibrous
- Provide reliable long term thermal performance over the lifetime of the building.

Contact Details

Customer Service

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

UK – Telephone: +44 (0) 870 850 8555
– Fax: +44 (0) 870 850 8666
– email: commercial.uk@insulation.kingspan.com

Ireland – Telephone: +353 (0) 42 97 95000
– Fax: +353 (0) 42 97 46129
– email: commercial.ie@insulation.kingspan.com

Literature & Samples

Kingspan Insulation produce 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 on the numbers below:

UK – Telephone: +44 (0) 870 733 8333
– Fax: +44 (0) 1544 387 299
– email: literature.uk@insulation.kingspan.com

Ireland – Telephone: +353 (0) 42 97 95038
– Fax: +353 (0) 42 97 46129
– email: literature.ie@insulation.kingspan.com

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 – Telephone: +44 (0) 870 761 7770
– Fax: +44 (0) 1544 387 289
– email: tapered.uk@insulation.kingspan.com

Ireland – Telephone: +353 (0) 42 97 95032
– Fax: +353 (0) 42 97 95669
– email: tapered.ie@insulation.kingspan.com

Technical Advice/Design

Kingspan Insulation Ltd support all of their 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 *TECHLINE* 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 Services Department can also give general application advice and advice on design detailing and fixing etc... Site surveys are also undertaken as appropriate.

Please contact the Kingspan Insulation Building Fabric Insulation Technical Services Department on the *TECHLINE* numbers below:

UK – Telephone: +44 (0) 870 850 8333
– Fax: +44 (0) 1544 387 278
– email: techline.uk@insulation.kingspan.com

Ireland – Telephone: +353 (0) 42 97 95032
– Fax: +353 (0) 42 97 95669
– email: techline.ie@insulation.kingspan.com

General Enquiries

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

UK – Telephone: +44 (0) 870 850 8555
– Fax: +44 (0) 870 850 8666
– email: info.uk@insulation.kingspan.com

Ireland – Telephone: +353 (0) 42 97 95000
– Fax: +353 (0) 42 97 46129
– email: info.ie@insulation.kingspan.com

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