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Kingspan® Insulation Solutions

Flat Roof Drainage – Rethinking Construction

ROOFING BEST PRACTICE
FOR THE 21ST CENTURY

Contents

SUMMARY

Kingspan **Therma**taper zero ODP Systems are tapered rigid urethane insulation boards designed for warm deck flat roofing applications. Using these products to achieve the requirements of the new Building Regulations / Standards could yield a saving of at least up to 21% over the cost of using alternative methods to create a fall in a flat roof for drainage purposes.

Kingspan **Therma**taper zero ODP Systems do not need time to dry out saving time in the scheduling of a construction project. It is estimated that the screed to falls systems, used for the case studies in this document, may require between 106 and 198 days to dry.

Kingspan **Therma**taper zero ODP Systems are estimated to be as little as 1% of the weight of a solution using screed to falls with a flat insulation board.

CURRENT PRACTICE

The provision of a fall in a warm deck flat roof is normally achieved in one of three ways: falls achieved by screed laid to falls; falls achieved by use of tapered insulation; or falls achieved by use of timber firrings under plywood base.

CHANGES TO THE BUILDING REGULATIONS

The new Approved Document L of the Building Regulations (England & Wales) and the new Technical Standard J of the Building Standards (Regulations) Scotland require a U-value of 0.25 W / m^2.K for flat roofs in non-residential buildings to comply with the elemental method of compliance.

ASSESSING THE ALTERNATIVES FOR FUTURE PRACTICE

The purpose of this report is to examine alternative methods of satisfying the requirements of Building Regulations / Standards for flat roof constructions.

This report examines alternative means of achieving these new requirements in three case studies.

The case studies are for new build non-residential projects with warm deck roofs only. Refurbishment is not covered.

The designs are based on achieving the new values as an average across the whole roof, not as a minimum at all points.

Three case studies have been examined for this report, of varying sizes and plan complexity:

Case Study 1: A relatively small rectangular roof plan with simple falls.

Case Study 2: A slightly larger complex roof plan with more complicated falls.

Case Study 3: A much larger roof plan, with relatively simple falls.

Three design options have been costed for each case study: falls achieved by screed laid to falls; falls achieved by use of tapered insulation; and falls achieved by use of timber firrings under plywood base (more usually associated with timber or metal deck roofs).

The three case studies all employ a concrete sub-base but the conclusions regarding tapered insulation compared with timber firrings would be equally valid in a metal deck roof situation. (It is unlikely that a screed would be used with a metal deck roof).

COST ANALYSIS OF THE ALTERNATIVES

Kingspan Insulation commissioned an independent cost analysis of the three case studies detailed above. Davis, Langdon & Everest carried out this cost analysis*.

		U value Achieved W/m².K	£/m²
Case Study 1	Tapered insulation	0.21	61.91
Case Study 1	Screed laid to falls	0.24	68.14
Case Study 1	Timber firrings	0.25	77.60
Case Study 2	Tapered insulation	0.24	65.54
Case Study 2	Screed laid to falls	0.24	70.57
Case Study 2	Timber firrings	0.25	81.50
Case Study 3	Tapered insulation	0.16	59.17
Case Study 3	Screed laid to falls	0.24	64.76
Case Study 3	Timber firrings	0.25	75.46

In all three case studies the tapered insulation solution has been shown to be the cheapest option.

In these case studies, a screeded option has been shown to be £5-6 per m² more expensive than a tapered insulation solution.

In all three case studies the most expensive means of achieving drainage falls is by the use of timber firrings. Timber firrings are likely to be a more valid solution on a timber or metal deck roof structure than a concrete sub-base but, in the roof plans indicated by these case studies, are still likely to be a more expensive option than the use of tapered insulation.

** A copy of the Davis Langdon & Everest report is available upon request from the Kingspan Insulation Marketing Department on 01544 387210.*

ADDITIONAL BENEFITS OF THE BEST PRACTICE ALTERNATIVE

In all of the case studies in this report (particularly Studies 1 and 3), as well as being the most economic choice, the tapered insulation option achieved U-values for the roof in excess of the forthcoming energy saving requirements.

In Case Study 1, the U-value for the roof using Tapered Insulation was 0.21 W/m².K. In Case Study 2, the U-value was 0.24 W/m².K.

In Case Study 3, the U-value was 0.16 W/m².K.

Tapered insulation does not suffer from the two inherent disadvantages in the use of screeds, drying time and weight.

A standard cement:sand screed dries out in approximately one month per 25mm thickness.

A standard cement:sand screed weighs approximately 2000 kg/m³. NB the weight of wet screed would be marginally greater.

		Approx. Drying Time (days)	Approx. Weight of Dry Screed (If Used) & Insulation (kg)
Case Study 1	Tapered insulation	0	676
Case Study 1	Screed laid to falls	158	50,473
Case Study 2	Tapered insulation	0	1,000
Case Study 2	Screed laid to falls	106	60,069
Case Study 3	Tapered insulation	0	13,521
Case Study 3	Screed laid to falls	198	1,006,592

Drying time could be improved by the use of a proprietary quick-drying screed.

A standard quick-drying screed dries out in approximately 7 days per 25 mm thickness. However the cost of such screeds is 40-50% higher than that of a normal cement:sand screed, ensuring the economic advantage of a tapered solution. Furthermore, a significant drying out period would still be required for thick screeds. Still faster drying out screeds are available but at a further cost penalty.

The weight of a screed can be of great consequence, particularly in the example of Case Study 3, where the average thickness is 162.5 mm. The weight of this would have undoubted consequences on the design of both the frame and foundations. This would inevitably incur an additional cost, adding the economic advantage of a tapered solution. This cost has not been take into account in the cost analysis presented in this document.

The use of a lightweight screed instead of a normal cement:sand screed would provide a partial benefit but these can cost up to double the cost of an ordinary cement:sand screed, establishing a significant margin between the screed and tapered insulation options (in favour of the tapered insulation).

KINGSPAN THERMATAPER ZERO ODP SYSTEMS

- *Kingspan* **Therma**taper zero ODP Systems provide insulation and drainage in one system.
- *Kingspan* **Therma**taper zero ODP Systems solve the problems associated with water ponding.
- *Kingspan* **Therma**taper zero ODP Systems are compatible with all weatherproofing systems.
- *Kingspan* **Therma**taper zero ODP Systems comprise high performance insulation, easily achieving required U-values.
- *Kingspan* **Therma**taper zero ODP Systems provides a practical alternative to screeding, structural falls or firrings.
- *Kingspan* **Therma**taper zero ODP Systems have no load bearing implications for new or existing structures.
- *Kingspan* **Therma**taper zero ODP Systems are resistant to the passage of water vapour.
- *Kingspan* **Therma**taper zero ODP Systems offer a high-tech solution that is easy to handle and install.
- *Kingspan* **Therma**taper zero ODP Systems are ideal for newbuild and refurbishment.
- *Kingspan* **Therma**taper zero ODP Systems are manufactured without of CFCs / HCFCs and have zero Depletion Potential.

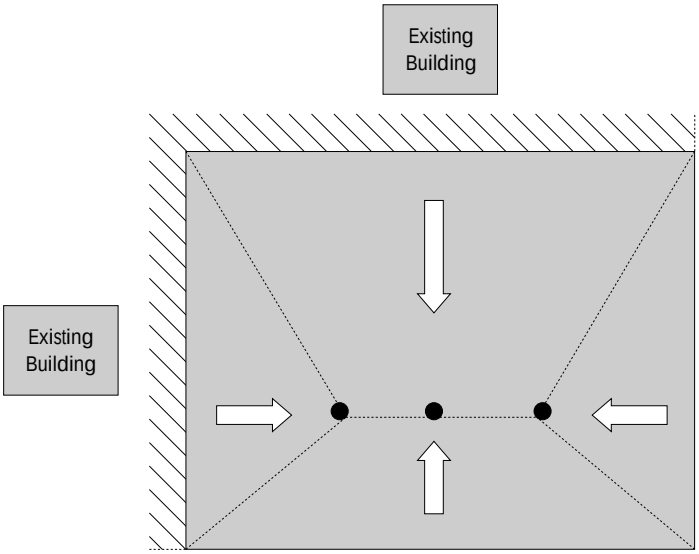
zero O.D.P

Case Study 1

CASE STUDY 1

SINGLE STOREY EXTENSION TO HOSPITAL DEPARTMENT

Roof area:	192 m².
Roof shape:	simple plan.
Base structure:	200mm pre-cast concrete plank.
Waterproofing:	two layer elastomeric roofing.
Drainage principles:	inward sloping to central roof outlets.
Fall:	1 in 60.
U-value requirement:	≤ 0.25 W / m².K.
R-value requirement:	≥ 4.00 m².K / W.
Soffit treatment:	mineral fibre suspended ceiling.



TAPERED INSULATION

Roof layer	Thermal conductivity (W / m.K)	Thermal resistance (m².K / W)
External surface resistance		0.040
2 layer elastomeric roofing	0.200	0.045
Aluminium laminate vapour barrier	0.133	0.023
Precast concrete roof slab		0.170
Airspace		0.180
Mineral fibre suspended ceiling	0.055	0.280
Internal surface resistance		0.100
Total resistance excluding insulation		0.838
Insulation resistance required		3.162
Resistance of 90 mm average *Kingspan* **Therma**taper TT42 zero ODP (λ=0.026 W / m².K)		3.168
However to achieve 1 in 60 falls, average thickness of 110 mm is required, with minimum thickness of 30 mm.		
Resistance of 110 mm average *Kingspan* **Therma**taper TT42 zero ODP (λ=0.026 W / m².K)		3.938
U-value achieved (W / m².K)		0.21
Approximate weight of *Kingspan* **Therma**taper zero ODP Scheme (kg) {thickness x density [32 kg / m³] x roof area}		676
Approximate drying time of *Kingspan* **Therma**taper zero ODP Scheme (days)		0.0

Cost of option from deck upwards	£ / m²
Bituminous primer to concrete deck	1.00
Aluminium laminate vapour barrier, fully bonded	5.00
110 mm average *Kingspan* **Therma**taper TT42 zero ODP	30.91
2 layer elastomeric roofing	25.00
Cost of roof finish (above deck level)	61.91

Build up of cost of 110 mm average *Kingspan* **Therma**taper TT42 zero ODP	£ / m²
Supply only cost (£3660 / roof area)	19.06
Bitumen bonding (bonding area 330m² x 0.50 £ / m² / roof area)	0.86
Labour in laying	3.50
Sub-total	23.42
Sundries, profit and overheads (20%)	4.68
Main contractor's discount, profit and attendances (10%)	2.81
Rate per m²	30.91

SCREED LAID TO FALLS

Roof layer	Thermal conductivity (W/m.K)	Thermal resistance (m^2.K/W)
External surface resistance		0.040
2 layer elastomeric roofing	0.200	0.045
Aluminium laminate vapour barrier	0.133	0.023
130 mm average cement:sand screed	1.400	0.093
Precast concrete roof slab		0.170
Airspace		0.180
Mineral fibre suspended ceiling	0.055	0.280
Internal surface resistance		0.100
Total resistance excluding insulation		0.931
Insulation resistance required		3.069
Resistance of 90 mm *Kingspan* **Therma**roof TR22 zero ODP (λ=0.026 W/m^2.K)		3.168
U-value achieved (W/m^2.K)		0.24
Approximate weight of dry screed and insulation (kg) {insulation thickness x density [32 kg/m^3] x roof area} + {screed thickness x density [2000 kg/m^3] x roof area}		50473
Approximate drying time of screed (days)		158

Cost of option from deck upwards	£/m^2
130 mm average cement:sand (1:3) screed, laid to falls	18.00
Bituminous primer to screed	1.00
Aluminium laminate vapour barrier, fully bonded	5.00
90 mm *Kingspan* **Therma**roof TR22 zero ODP	19.14
2 layer elastomeric roofing	25.00
Cost of roof finish (above deck level)	68.14

Build up of cost of 90 mm *Kingspan* **Therma**roof TR22 zero ODP	£/m^2
Supply only cost	12.50
Waste (2%)	0.25
Bitumen bonding	0.50
Labour in laying	1.25
Sub-total	14.50
Sundries, profit and overheads (20%)	2.90
Main contractor's discount, profit and attendances (10%)	1.74
Rate per m^2	19.14

TIMBER FIRRINGS TO FALLS

Roof layer	Thermal conductivity (W/m.K)	Thermal resistance (m^2.K/W)
External surface resistance		0.040
2 layer elastomeric roofing	0.200	0.045
Aluminium laminate vapour barrier	0.133	0.023
18 mm plywood	0.14	0.129
Softwood firrings (incl. airspace)		0.240
Precast concrete roof slab		0.170
Airspace		0.180
Mineral fibre suspended ceiling	0.055	0.280
Internal surface resistance		0.100
Total resistance excluding insulation		1.207
Insulation resistance required		2.793
Resistance of 80 mm *Kingspan* **Therma**roof TR22 zero ODP (λ=0.026 W/m^2.K)		2.784
U-value achieved (W/m^2.K)		0.25

Cost of option from deck upwards	£/m^2
Softwood joists/firrings fixed to concrete deck	15.00
18 mm WBP Plywood roof decking	15.00
Aluminium laminate vapour barrier, fully bonded	5.00
80 mm *Kingspan* **Therma**roof TR22 zero ODP insulation	17.60
2 layer elastomeric roofing	25.00
Cost of roof finish (above deck level)	77.60

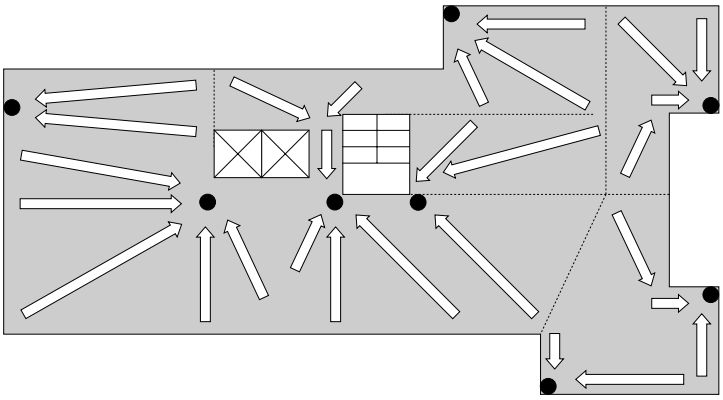
Build up of cost of 80 mm *Kingspan* **Therma**roof TR22 zero ODP	£/m^2
Supply only cost	11.35
Waste (2%)	0.23
Bitumen bonding	0.50
Labour in laying	1.25
Sub-total	13.33
Sundries, profit and overheads (20%)	2.67
Main contractor's discount, profit and attendances (10%)	1.60
Rate per m^2	17.60

Case Study 2

CASE STUDY 2

REBUILT INNER CITY OFFICE BLOCK

Roof area:	338 m².
Roof shape:	more complicated plan.
Base structure:	150mm lightweight concrete slab on permanent metal deck formwork.
Waterproofing:	single layer polymeric roofing 1.2mm.
Drainage principles:	inward sloping to central roof outlets and outward sloping to perimeter roof outlets.
Fall:	1 in 80.
U-value requirement:	≤ 0.25 W / m².K.
R-value requirement:	≥ 4.00 m².K / W.
Soffit treatment:	plasterboard suspended ceiling.



TAPERED INSULATION

Roof layer	Thermal conductivity (W / m.K)	Thermal resistance (m².K / W)
External surface resistance		0.040
1.2 mm single-ply polymeric roofing	0.15	0.008
Bituminous vapour check Type 3B	0.20	0.010
150 mm Lightweight aggregate concrete slab (1600 kg / m³)	0.71	0.217
Permanent metal deck		0.000
Airspace		0.180
Plasterboard suspended ceiling	0.16	0.078
Internal surface resistance		0.100
Total resistance excluding insulation		0.633
Insulation resistance required		3.367
Resistance of 85 mm average *Kingspan* **Therma**taper TT47 zero ODP (λ=0.026 W / m².K)		3.269
However to achieve 1 in 80 falls, average thickness of 92.5 mm is required, with minimum thickness of 55mm.		
Resistance of 92.5 mm average *Kingspan* **Therma**taper TT47 zero ODP (λ=0.026 W / m².K)		3.558
U-value achieved (W / m².K)		0.24
Approximate weight of *Kingspan* **Therma**taper zero ODP Scheme (kg) {thickness x density [32 kg / m3] x roof area}		1,000
Approximate drying time of *Kingspan* **Therma**taper zero ODP Scheme (days)		0.0

Cost of option from deck upwards	£ / m²
Smooth finish to concrete slab	2.00
Bituminous primer to concrete deck	1.00
Bituminous vapour check Type 3B, fully bonded	2.75
92.5 mm average *Kingspan* **Therma**taper TT47 zero ODP	19.79
1.2 mm single-ply polymeric roofing	40.00
Cost of roof finish (above deck level)	65.54

Build up of cost of 92.5 mm average *Kingspan* **Therma**taper TT47 zero ODP	£ / m²
Supply only cost (£3570 / roof area)	10.56
Bitumen bonding (bonding area 460m² x 0.50 £ / m² / roof area)	0.68
Labour in laying	3.75
Sub-total	14.99
Sundries, profit and overheads (20%)	3.00
Main contractor's discount, profit and attendances (10%)	1.80
Rate per m²	19.79

SCREED LAID TO FALLS

Roof layer	Thermal conductivity (W/m.K)	Thermal resistance (m^2.K/W)
External surface resistance		0.040
1.2 mm single-ply polymeric roofing	0.15	0.008
Bituminous vapour barrier Type 3B	0.20	0.010
87.5 mm average cement:sand screed	1.40	0.063
150 mm Lightweight aggregate concrete slab (1600 kg/m^3)	0.71	0.217
Permanent metal deck		0.000
Airspace		0.180
Plasterboard suspended ceiling	0.16	0.078
Internal surface resistance		0.100
Total resistance excluding insulation		0.696
Insulation resistance required		3.304
Resistance of 85 mm *Kingspan* **Therma**roof TR27 zero ODP (λ=0.025 W/m^2.K)		3.400
U-value achieved (W/m^2.K)		0.24
Approximate weight of dry screed and insulation (kg) {insulation thickness x density [32 kg/m^3] x roof area} + {screed thickness x density [2000 kg/m^3] x roof area}		60069
Approximate drying time of screed (days)		106

Cost of option from deck upwards	£/m^2
87.5 mm average cement:sand (1:3) screed, laid to falls	14.50
Bituminous primer to screed	1.00
Bituminous vapour barrier Type 3B, fully bonded	2.75
85 mm *Kingspan* **Therma**roof TR27 zero ODP	12.32
1.2 mm single-ply polymeric roofing	40.00
Cost of roof finish (above deck level)	70.57

Build up of cost of 85 mm *Kingspan* **Therma**roof TR27 zero ODP	£/m^2
Supply only cost	7.15
Waste (2.5%)	0.18
Bitumen bonding	0.50
Labour in laying	1.50
Sub-total	9.33
Sundries, profit and overheads (20%)	1.87
Main contractor's discount, profit and attendances (10%)	1.12
Rate per m^2	12.32

TIMBER FIRRINGS TO FALLS

Roof layer	Thermal conductivity (W/m.K)	Thermal resistance (m^2.K/W)
External surface resistance		0.040
1.2 mm single-ply polymeric roofing	0.15	0.008
Bituminous vapour check Type 3B	0.20	0.010
18 mm plywood	0.14	0.129
Softwood firrings (incl. airspace)		0.200
150 mm Lightweight aggregate concrete slab (1600 kg/m^3)	0.71	0.217
Permanent metal deck		0.000
Airspace		0.180
Plasterboard suspended ceiling	0.16	0.078
Internal surface resistance		0.100
Total resistance excluding insulation		0.962
Insulation resistance required		3.038
Resistance of 80 mm *Kingspan* **Therma**roof TR27 zero ODP (λ=0.025 W/m^2.K)		3.200
U-value achieved (W/m^2.K)		0.24

Cost of option from deck upwards	£/m^2
Smooth finish to concrete slab	2.00
Softwood joists/firrings fixed to concrete deck	10.00
18 mm WBP Plywood roof decking	15.25
Bituminous vapour check Type 3B, fully bonded	2.75
80 mm *Kingspan* **Therma**roof TR27 zero ODP	11.50
1.2 mm single-ply polymeric roofing	40.00
Cost of roof finish (above deck level)	81.50

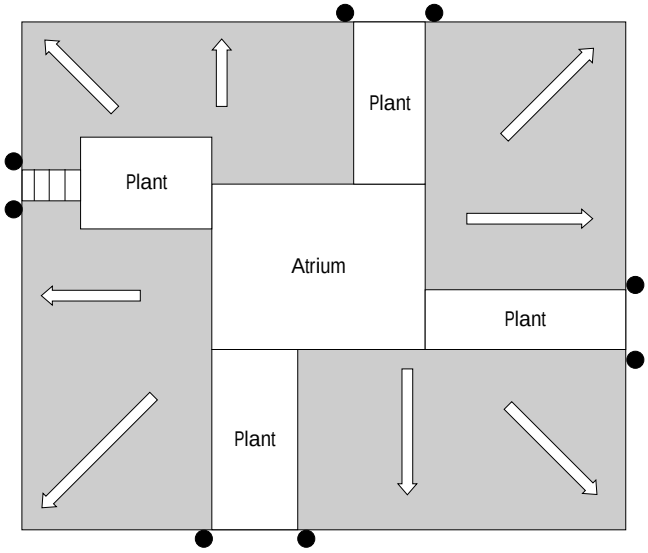
Build up of cost of 80 mm *Kingspan* **Therma**roof TR27 zero ODP	£/m^2
Supply only cost	6.55
Waste (2.5%)	0.16
Bitumen bonding	0.50
Labour in laying	1.50
Sub-total	8.71
Sundries, profit and overheads (20%)	1.74
Main contractor's discount, profit and attendances (10%)	1.05
Rate per m^2	11.50

Case Study 3

CASE STUDY 3

NEW BUILD OPEN ASPECT OFFICE BUILDING WITH CENTRAL ATRIUM AND ROOF LEVEL PLANT ROOMS

Roof area:	3073 m².
Roof shape:	simple plan - lower roof level excluding atrium and plant room roofs.
Base structure:	300mm in-situ concrete deck.
Waterproofing:	single layer polymeric roofing 1.5mm.
Drainage principles:	outward sloping to perimeter gutter.
Fall:	1 in 80.
U-value requirement:	≤ 0.25 W / m².K.
R-value requirement:	≥ 4.00 m².K / W.
Soffit treatment:	mineral fibre suspended ceiling.



TAPERED INSULATION

Roof layer	Thermal conductivity (W / m.K)	Thermal resistance (m².K / W)
External surface resistance		0.040
1.5 mm single-ply polymeric roofing	0.15	0.010
Bituminous vapour check Type 3B	0.20	0.010
300 mm concrete slab (2300 kg / m³)	1.75	0.170
Airspace		0.180
Mineral wool suspended ceiling	0.055	0.280
Internal surface resistance		0.100
Total resistance excluding insulation		0.790
Insulation resistance required		3.210
Resistance of 85 mm average *Kingspan* **Therma**taper TT47 zero ODP (λ=0.026 W / m².K)		3.269
However to achieve 1 in 80 falls, average thickness of 137.5 mm is required, with minimum thickness of 25 mm.		
Resistance of 137.5 mm average *Kingspan* **Therma**taper TT47 zero ODP		5.288
U-value achieved (W / m².K)		0.16
Approximate weight of *Kingspan* **Therma**taper zero ODP Scheme (kg) {thickness x density [32 kg / m³] x roof area}		13,521
Approximate drying time of *Kingspan* **Therma**taper zero ODP Scheme (days)		0.0

Cost of option from deck upwards	£ / m²
Smooth finish to concrete slab	2.00
Bituminous primer to concrete deck	1.00
Bituminous vapour check Type 3B, fully bonded	2.50
137.5 mm average *Kingspan* **Therma**taper TT47 zero ODP	23.67
1.5 mm single-ply polymeric roofing	30.00
Cost of roof finish (above deck level)	59.17

Build up of cost of 137.5 mm average *Kingspan* **Therma**taper TT47 zero ODP	£ / m²
Supply only cost (£43700 / roof area)	14.22
Bitumen bonding (bonding area 4380m² x 0.50 £ / m² / roof area)	0.71
Labour in laying	3.00
Sub-total	17.93
Sundries, profit and overheads (20%)	3.59
Main contractor's discount, profit and attendances (10%)	2.15
Rate per m²	23.67

SCREED LAID TO FALLS

Roof layer	Thermal conductivity (W/m.K)	Thermal resistance (m^2.K/W)
External surface resistance		0.040
1.5 mm single-ply polymeric roofing	0.15	0.010
Bituminous vapour check Type 3B	0.20	0.010
162.5 mm average cement:sand screed	1.40	0.116
300 mm concrete slab (2300 kg/m^3)	1.75	0.170
Airspace		0.180
Mineral fibre suspended ceiling	0.056	0.280
Internal surface resistance		0.100
Total resistance excluding insulation		0.906
Insulation resistance required		3.094
Resistance of 80 mm *Kingspan* **Therma**roof TR27 zero ODP (λ=0.025 W/m^2.K)		3.200
U-value achieved (W/m^2.K)		0.24
Approximate weight of dry screed and insulation (kg) {insulation thickness x density [32 kg/m^3] x roof area} + {screed thickness x density [2000 kg/m^3] x roof area}		1,006,592
Approximate drying time of screed (days)		198

Cost of option from deck upwards	£/m^2
162.5 mm average cement:sand (1:3) screed, laid to falls	20.50
Bituminous primer to screed	1.00
Bituminous vapour check Type 3B, fully bonded	2.50
80 mm *Kingspan* **Therma**roof TR27 zero ODP	0.76
1.5 mm single-ply polymeric roofing	30.00
Cost of roof finish (above deck level)	64.76

Build up of cost of 80 mm *Kingspan* **Therma**roof TR27 zero ODP	£/m^2
Supply only cost	6.55
Waste (1.5%)	0.10
Bitumen bonding	0.50
Labour in laying	1.00
Sub-total	8.15
Sundries, profit and overheads (20%)	1.63
Main contractor's discount, profit and attendances (10%)	0.98
Rate per m^2	10.76

TIMBER FIRRINGS TO FALLS

Roof layer	Thermal conductivity (W/m.K)	Thermal resistance (m^2.K/W)
External surface resistance		0.040
1.5 mm single-ply polymeric roofing	0.15	0.010
Bituminous vapour check Type 3B	0.20	0.010
18 mm plywood	0.14	0.129
Softwood firrings (incl. airspace)		0.270
300 mm concrete slab (2300 kg/m^3)	1.75	0.170
Airspace		0.180
Mineral fibre suspended ceiling	0.055	0.280
Internal surface resistance		0.100
Total resistance excluding insulation		1.189
Insulation resistance required		2.811
Resistance of 75 mm *Kingspan* **Therma**roof TR27 zero ODP (λ=0.026 W/m^2.K)		2.885
U-value achieved (W/m^2.K)		0.25

Cost of option from deck upwards	£/m^2
Smooth finish to concrete slab	2.00
Softwood joists/firrings fixed to concrete deck	16.50
18 mm WBP Plywood roof decking	14.50
Bituminous vapour check Type 3B, fully bonded	2.50
75 mm *Kingspan* **Therma**roof TR27 zero ODP	9.96
1.5 mm single-ply polymeric roofing	30.00
Cost of roof finish (above deck level)	75.46

Build up of cost of 75 mm *Kingspan* **Therma**roof TR27 zero ODP	£/m^2
Supply only cost	5.95
Waste (1.5%)	0.09
Bitumen bonding	0.50
Labour in laying	1.00
Sub-total	7.54
Sundries, profit and overheads (20%)	1.51
Main contractor's discount, profit and attendances (10%)	0.91
Rate per m^2	9.96

CUSTOMER SERVICE

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

UK – Telephone: +44 (0) 1544 388 601
– Fax: +44 (0) 1544 388 888
– 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

TECHNICAL ADVICE

Kingspan Insulation Ltd support all of their products with a comprehensive Technical Advisory Service for specifiers, stockists and contractors.

This includes a free computer-aided service designed to give fast, accurate technical advice. Simply phone our *TECHLINE* with your project specification and we can run calculations to provide U-values, condensation / dew point risk, required insulation thicknesses etc.... Thereafter we can run any number of permutations to help you achieve your desired targets.

We can also give general application advice and advice on design detailing and fixing etc... Site surveys are also undertaken as appropriate.

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

TECHLINE

UK: – Freephone: 0800 610 061
– Telephone: +44 (0) 1544 387 260
(if dialling from outside the UK)
– Fax: +44 (0) 1544 388 888
– email: techline.uk@insulation.kingspan.com

Ireland: – Telephone: +353 (0) 42 97 95032
– Fax: +353 (0) 42 97 46129
– email: techline.ie@insulation.kingspan.com

LITERATURE AND 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, on CD-ROM or as individual product brochures, Kingspan Insulation technical literature is an essential specification tool. For copies please contact our Marketing Department on the numbers below:

UK – Telephone: +44 (0) 1544 387 210
– 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

GENERAL ENQUIRIES

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

UK – Telephone: +44 (0) 1544 388 601
– Fax: +44 (0) 1544 388 888
– 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

Kingspan Insulation reserve the right to amend product specifications without prior notice. 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 as to the suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, Kingspan Insulation offers a free Technical Advisory Service (see left) whose advice should be sought for uses of Kingspan Insulation products that are not specifically described herein. Please check that your copy of the literature is current by contacting our Marketing Department (see above).

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