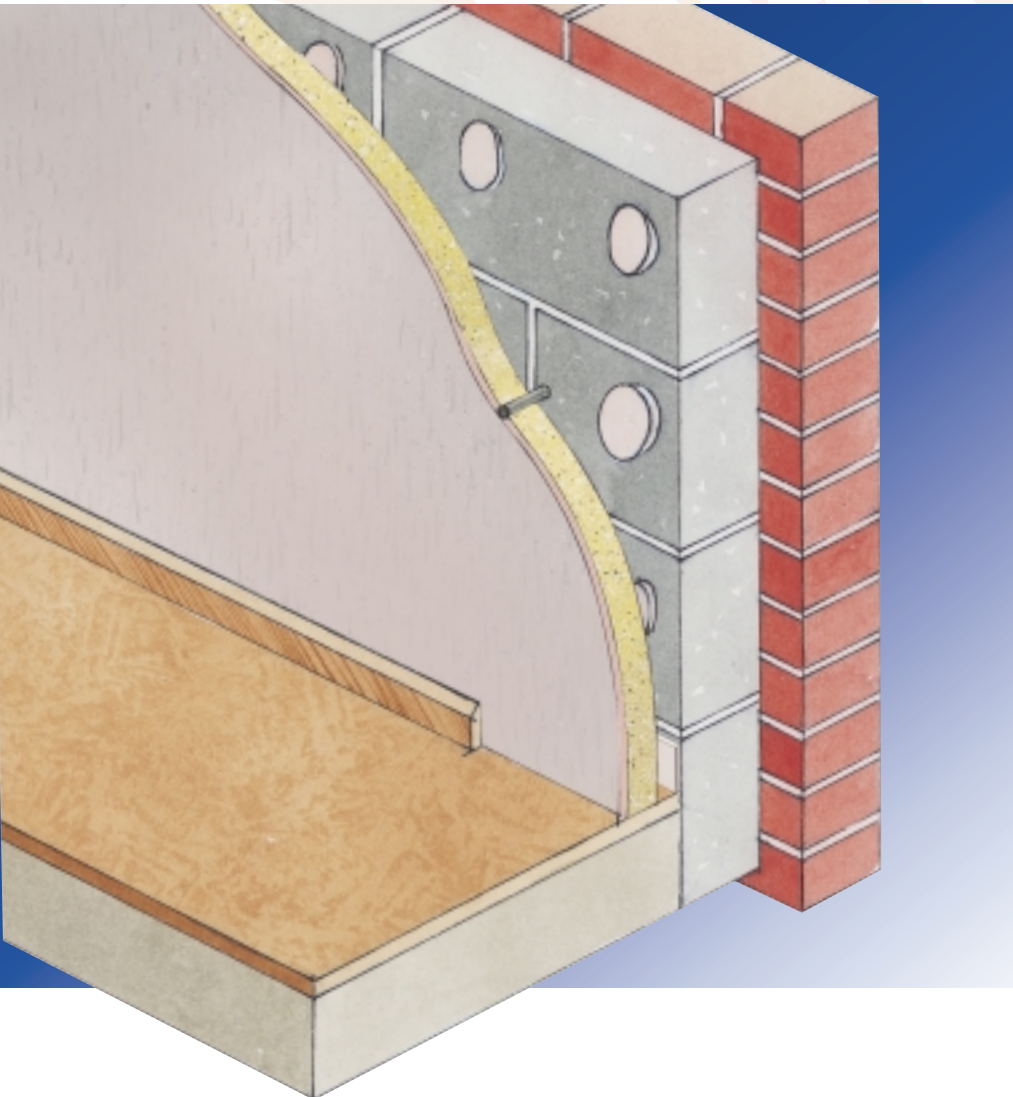


Thermawall TW52 zero ODP

INSULATED DRY-LINING PLASTERBOARD
FOR PLASTER-DAB/ADHESIVE BONDING



- ▼ High performance rigid urethane insulation – thermal conductivity 0.024-0.026 W/m.K
- ▼ Insulation, dry-lining and vapour control in one board
- ▼ Little encroachment of room space
- ▼ Energy saving – allows quick response heating
- ▼ Resistant to the passage of water vapour
- ▼ Easy to handle and install
- ▼ Ideal for newbuild or refurbishment
- ▼ CFC/HCFC-free with zero Ozone Depletion Potential (ODP)



BS EN ISO 9002 : 1994
Certificate No. FM 10697



Kingspan **Thermawall** TW52 zero ODP

TYPICAL DESIGN DETAIL

Figure 1 PLASTER DAB BONDING

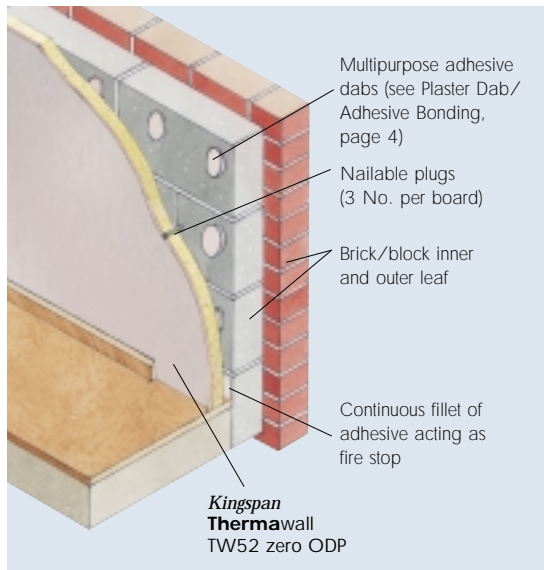
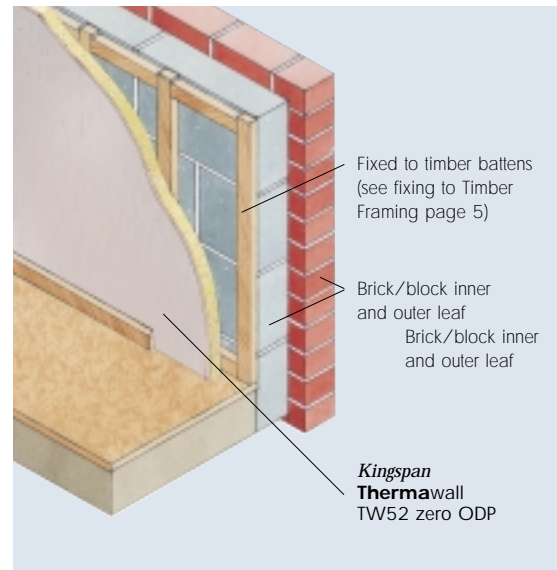


Figure 2 TIMBER BATTEN



SPECIFICATION CLAUSE

Kingspan Thermawall TW52 zero ODP should be described in specifications as:-

The wall dry-lining insulation shall be *Kingspan Thermawall* TW52 zero ODP comprising a 12.5 mm plasterboard facing bonded to ___mm thick CFC/HCFC-free rigid urethane insulation during manufacture to BS EN ISO 9002 : 1994 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):
K10 205 (Standard and Intermediate)
K10 15 (Minor Works)



DESIGN CONSIDERATIONS

DESIGN STANDARDS

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

DRY WALL LINING

Kingspan Thermawall TW52 zero ODP can be applied utilising a variety of traditional or modern dry-lining techniques. These include traditional plaster bonding, adhesive bonding, metal furring system, nailing to timber framing/battens. The particular system employed will depend on the construction or design of the wall to which *Kingspan Thermawall* TW52 zero ODP is to be fixed. The tapered edge board enables flat seamless surfaces equal to traditional plaster finishes after the correct jointing procedures have been completed.

COLD BRIDGING

In order to avoid the effects of cold bridging, window and door reveals should also be insulated. The margins of window and door reveals should therefore be sufficient to accommodate the thickness of the *Kingspan Thermawall* TW52 zero ODP being employed. The possibility of a cold bridge occurring via the window boards should also be considered and provision made to insulate this area.

WATER VAPOUR CONTROL

Surface Condensation

Surface condensation can be controlled by the selection of the correct thickness of insulation, the heating and ventilation system being designed with condensation in mind, and subsequently the combination of heating and ventilation being used correctly.

Interstitial Condensation

The Kingspan Insulation Technical Services Department can provide a condensation risk analysis of your proposed design (see rear cover). Alternatively the designer can undertake an independent assessment by following the procedures set out in BS 5250: 1989 (1995) (Code of practice for the control of condensation in buildings).

The vapour resistance of the wall lining can be increased by application of two coats of British Gypsum Drywall Topcoat.

THERMAL PROPERTIES

The R-values and λ -values quoted in this document for rigid urethane insulation are based on the procedures for the determination of the aged values of thermal resistance and thermal conductivity, laid down in the harmonised European standard BS EN 13165, using so called 90:90 principles. Comparison with alternative products may not be appropriate unless the same procedures have been followed.

THERMAL CONDUCTIVITY

Thermal conductivity (λ -value) of the plasterboard component of **Kingspan Thermawall TW52 zero ODP** is 0.18 W/m.K. The thermal conductivity of the insulation core of **Kingspan Thermawall TW52 zero ODP** is 0.026 W/m.K (insulant thicknesses < 80 mm), 0.025 W/m.K (insulant thicknesses from 80 mm to < 120 mm) and 0.024 W/m.K (insulant thicknesses \geq 120 mm).

THERMAL RESISTANCES

Thermal resistance (R-value) varies with the thickness of each component. It is calculated by dividing the thickness of each components (expressed in metres) by its thermal conductivity and adding the relevant figures together.

*Product Thickness (mm)	Thermal Resistance (m ² .K/W)
32.5	0.838
37.5	1.030
42.5	1.223
47.5	1.415
52.5	1.607
57.5	1.800
62.5	1.992
67.5	2.184
72.5	2.377
77.5	2.569
82.5	2.761
87.5	2.954
92.5	3.269
97.5	3.469

*Product thickness = insulant thickness + 12.5 mm plasterboard

TYPICAL U-VALUES

The following examples have been calculated using both the combined method and the proportional area method. The combined method is required for compliance with Building Regulations / Standards revised after the year 2000. These examples (unless stated otherwise) are based on the use of **Kingspan Thermawall TW52 zero ODP**, plaster dab bonded to the background described. If your construction is any different, please consult our Technical Services Department.

Combined 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 / IS EN ISO 6946: 1997 (Building components and building elements. Thermal resistance and thermal transmittance. Calculation method).

Proportional Area Method – the U-values shown below were calculated using the proportional area method as detailed in The Chartered Institute of Building Services Engineers (CIBSE) Guide A3 (Thermal Properties of Building Structures).

NB when calculating U-values using the combined method as detailed in BS / IS EN ISO 6946: 1997, the type of mechanical fixing used may change the thickness of insulation required. The effect of fixings has been ignored for the purposes of these calculations. Please contact the Kingspan Insulation Technical Services Department (see rear cover) for project calculations.

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.

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

BRICK/CAVITY/BRICK

*Product Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
32.5	0.64	0.64
37.5	0.57	0.57
42.5	0.51	0.51
52.5	0.43	0.43
62.5	0.37	0.37
67.5	0.34	0.34
72.5	0.32	0.32
77.5	0.30	0.30
82.5	0.29	0.29
87.5	0.27	0.27
92.5	0.25	0.25

*Product thickness = insulant thickness + 12.5 mm plasterboard

RENDER FINISH/DENSE CONCRETE BLOCK (λ -VALUE 1.13 W/m.K)/CAVITY/DENSE CONCRETE BLOCK (λ -VALUE 1.13 W/m.K)

*Product Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
32.5	0.66	0.66
37.5	0.59	0.59
42.5	0.53	0.53
52.5	0.44	0.44
62.5	0.38	0.38
67.5	0.35	0.35
72.5	0.33	0.33
82.5	0.29	0.29
87.5	0.28	0.28
92.5	0.26	0.26
97.5	0.24	0.24

*Product thickness = insulant thickness + 12.5 mm plasterboard

Kingspan **Therma**wall TW52 zero ODP

BRICK/CAVITY/DENSE CONCRETE BLOCK (λ-VALUE 1.13 W/m.K)

*Product Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
32.5	0.67	0.66
37.5	0.59	0.59
42.5	0.53	0.53
52.5	0.44	0.44
62.5	0.38	0.38
67.5	0.35	0.35
72.5	0.33	0.33
82.5	0.29	0.29
87.5	0.28	0.28
92.5	0.25	0.25

*Product thickness = insulant thickness + 12.5 mm plasterboard

BRICK/CAVITY/MEDIUM DENSITY CONCRETE BLOCK (λ-VALUE 0.51 W/m.K)

*Product Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
32.5	0.62	0.62
37.5	0.56	0.55
42.5	0.50	0.50
52.5	0.42	0.42
62.5	0.36	0.36
67.5	0.34	0.34
72.5	0.32	0.32
77.5	0.30	0.30
82.5	0.28	0.28
87.5	0.27	0.27
92.5	0.25	0.25

*Product thickness = insulant thickness + 12.5 mm plasterboard

BRICK/CAVITY/LIGHTWEIGHT CONCRETE BLOCK (λ-VALUE 0.15 W/m.K) ACCOUNTING FOR MORTAR JOINTS

*Product Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
32.5	0.50	0.50
37.5	0.46	0.46
42.5	0.42	0.42
52.5	0.36	0.36
62.5	0.32	0.32
67.5	0.30	0.30
72.5	0.28	0.28
77.5	0.27	0.27
82.5	0.26	0.26
87.5	0.24	0.24

*Product thickness = insulant thickness + 12.5 mm plasterboard

BRICK/CAVITY/AERATED CONCRETE BLOCK (λ-VALUE 0.11 W/m.K) ACCOUNTING FOR MORTAR JOINTS

*Product Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
32.5	0.47	0.46
37.5	0.43	0.43
42.5	0.39	0.39
47.5	0.37	0.37
52.5	0.34	0.34
62.5	0.30	0.30
72.5	0.27	0.27
82.5	0.25	0.25

*Product thickness = insulant thickness + 12.5 mm plasterboard

215 mm SOLID BRICK WALL WITH **Kingspan Therma**wall TW52 zero ODP MECHANICALLY FIXED TO TIMBER BATTENS

*Product Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
32.5	0.69	0.69
37.5	0.61	0.61
42.5	0.55	0.54
52.5	0.45	0.45
62.5	0.38	0.38
67.5	0.36	0.36
72.5	0.34	0.33
82.5	0.30	0.30
87.5	0.28	0.28
92.5	0.26	0.26
97.5	0.25	0.25

*Product thickness = insulant thickness + 12.5 mm plasterboard

RENDER FINISH/215 mm SOLID AERATED CONCRETE BLOCK (λ-VALUE 0.11 W/m.K) ACCOUNTING FOR MORTAR JOINTS

*Product Thickness (mm)	U-value (W/m ² .K)	
	Combined Method	Proportional Area Method
32.5	0.37	0.37
37.5	0.34	0.35
42.5	0.32	0.33
47.5	0.30	0.31
52.5	0.29	0.29
57.5	0.27	0.28
62.5	0.26	0.26
67.5	0.25	0.25

*Product thickness = insulant thickness + 12.5 mm plasterboard

SITework

Dependent on the specified fixing method, traditional plaster bonding, adhesive bonding, screwing to a plaster bonded metal furring system, nailing to studding, or nailing to prefixed battens, fixing should proceed as follows:-

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. Heavy surface mounted fittings will require provision for the fixing load to be applied direct to the supporting wall and not to the **Kingspan Thermawall TW52 zero ODP** in isolation. On existing constructions all surfaces should be clean and free of loose or flaking materials. Wallpaper should be stripped and surface mounted fittings removed.

WINDOW – DOOR REVEALS AND SOFFITS

Narrow widths of board should be cut and rebated to allow a plasterboard/plasterboard joint at the angle. Fixing should employ the same method as is used for the plain wall areas. Care should be taken to ensure that the cavity in cavity wall constructions is not bridged by the board or fixing medium so that it allows water to pass to the inner leaf. Where adhesives are employed, soffit boards and boards at window heads should be temporarily supported.

PLASTER DAB BONDING

This method is for applications to brick, block or concrete masonry cavity walls. The method usually involves setting out a continuous fillet of British Gypsum adhesive around perimeter wall and ceiling junctions, and around any openings in order to provide a seal. Vertical dabs of the British Gypsum adhesive are progressively applied to the background together with a continuous fillet at skirting and ceiling level. The number, size and lay-out of the dabs will depend on the chosen gypsum adhesive manufacturers recommendations. Boards are then located against the adhesive dabs and tapped back to align with predetermined guidelines on the floor and ceiling. Gyproc Nailable plugs are recommended to complement the plaster dab bond, these are normally applied at a rate of 3 No. per board, after the plaster dabs have set. Two fixings positioned at the top of each board and one in the board centre.

ADHESIVE BONDING

This method is for application to sound, plane concrete or plastered wall surfaces on cavity walls. Bostik 1440 adhesive is applied to the wall surface in strips to a pre-determined pattern that coincides with the edges of the board, a further strip is applied horizontally at the mid point of the board. Strips of Bostik 1440 pads are then applied to the wet adhesive which is allowed to become tacky which takes about half an hour. The protective paper is then removed from the foam strips, and a coating of adhesive is applied to the corresponding position on the **Kingspan Thermawall TW52 zero ODP**.

After a suitable delay to allow the adhesive to become tacky the board should be accurately offered up to the wall and pressed firmly back onto the pads.

Nailable plugs are recommended at a rate of 3 No. per board after the adhesive has set. Please refer to BBA Certificate 97/3366 for further adhesive bond techniques.

METAL FRAME SYSTEM

Kingspan Thermawall TW52 zero ODP can be fixed by the use of proprietary metal framing systems to brick block or concrete walls. The metal frame should be fixed to the masonry or concrete wall in accordance with the manufacturers instruction to provide a true and level base for the board. The frame should be set vertically at a maximum of 600 mm centres to coincide with board joints and mid point of board. Short lengths of metal framing should be fixed horizontally between the vertical pieces at skirting level, at the midpoint of the board and just below the ceiling or soffit level. Provision for horizontal services behind the board can be made by the use of two pieces of metal framing set no more than 300 mm apart. **Kingspan Thermawall TW52 zero ODP** should be screw fixed to each metal framing section with self drilling and tapping, countersunk, surface coated (to avoid corrosion), screws placed at 150 mm centres. Screws should not be sited less than 10 mm from the edges of the board. The screws should be driven straight until the heads are slightly below the paper surface of the plasterboard facing taking care not to overdrive the screws.

Kingspan **Thermawall** TW52 zero ODP

FIXING TO TIMBER FRAMING/BATTENS

This method may be used on timber frame constructions or on any dry masonry walls that will support and retain the battens and associated fixings. **Kingspan Thermawall TW52 zero ODP** should be fixed to timber framing/battens set at maximum 600 mm centres and positioned horizontally at floor and ceiling level. The timbers should run vertically and be wide enough to offer a minimum 20 mm support to all four edges of the board. Galvanised clout nails, long enough to allow a minimum 25 mm penetration of the timber, should be placed at 150 mm centres and not less than 10 mm from the edges of the board. They should be driven straight with the heads embedded just below the surface of the board. Care should be taken not to overdrive nails. Timbers should be treated where appropriate.

MECHANICAL FIXING

This method is for application to fair finished brick, block and concrete cavity walls where **Kingspan Thermawall TW52 zero ODP** is to be finished with British Gypsum plaster. The wall should be sound, dry and level. (Surface irregularities may impede the fixing of the board). The board should be fully restrained using mechanical fixings. The number and type of such fixings should be in accordance with the fixing suppliers recommendations, and should be evenly distributed over the whole area of the board, fixings should not overlap board edges.

CEILING LININGS (HORIZONTAL & SLOPING)

Kingspan Thermawall TW52 zero ODP may be used to line ceilings. Installation is similar to standard plasterboard. Boards must always be placed with the long edge running across the joists, rafters or battens and all edges must be supported. Timbers must offer a minimum 20 mm support to all four edges of the board. This will necessitate the use of noggins placed between the joists to coincide with the long edges of the board. Large headed galvanised clout or sheradised nails should be used to fix the board. These must be long enough to allow a minimum 25 mm penetration of the supporting timber, and be placed not less than 10 mm from the edges of the board and be spaced at 150 mm intervals along all supporting timbers.

FINISHING

Tapered edge boards allow the employment of standard dry-lining techniques. Other finishes such as board finish plaster can be applied to boards supplied with a square edged, plasterboard facing. The finishing should be carried out in accordance with the specified manufacturers instruction, particularly in relation to the need to allow thorough drying of the plaster prior to decoration.

FIRE STOPS

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

CUTTING

Cutting should be carried out using a fine toothed saw, or by cutting through the insulation, and paper backing of the plasterboard, then snapping the board 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 Thermawall TW52 zero ODP is available through specialist insulation distributors and selected Builders Merchants throughout the UK, Ireland and Europe.

PACKAGING

The boards are supplied palletised in labelled packs with protective corner pieces and shrinkwrapped in polythene.

STORAGE

The packaging of **Kingspan Thermawall TW52 zero ODP** should not be considered adequate for outside protection. Ideally, boards should be stored inside a building. If, however, temporary, outside storage cannot be avoided, the boards should be stacked flat on a level base, 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 our Technical Services Department (see rear cover).

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 FRONT FACING

The front facing of **Kingspan Thermawall TW52 zero ODP** is a tough gypsum based plasterboard. A tapered edge surface is available which readily accepts dry jointing materials and direct decoration. Alternatively a square edge surface is available for plaster skim.

THE CORE

The core of **Kingspan Thermawall TW52 zero ODP** is a high performance CFC/HCFC-free rigid urethane insulant of typical density 32 kg/m³.

THE REVERSE FACE

The reverse facing of **Kingspan Thermawall TW52 zero ODP** is a wet lay coated glass fibre tissue autohesively bonded to the insulation core during manufacture.

CFC/HCFC-FREE

Kingspan Thermawall TW52 zero ODP is without the use of CFCs/HCFCs and has zero Ozone Depletion Potential (ODP).



PRODUCT DATA

STANDARDS AND APPROVALS

Kingspan Thermawall TW52 zero ODP is manufactured to the highest standards under a quality control system approved to BS EN ISO 9002: 1994 (Quality systems. Model for quality assurance in production, installation and servicing). Its use is covered by BBA Certificate 97/3366.



BS EN ISO 9002 : 1994
Certificate No. FM 10697

STANDARD DIMENSIONS

Kingspan Thermawall TW52 zero ODP is available in the following standard size and thicknesses:

Nominal Dimension	Availability
Length (m)	2.4
Width (m)	1.2
Plasterboard Thickness (mm)	12.5
Insulant Thickness* (mm)	20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85

* Other thicknesses are available subject to quantity.

INSULATION COMPRESSIVE STRENGTH

Typically exceeds 150 kPa at 10% compression when tested to BS 4370: Part 1: 1988 (1996) (Methods of test for rigid cellular materials).

WATER VAPOUR RESISTANCE

Modified to include board facings, the boards achieve a resistance greater than 15 MN.s/g, when tested in accordance with BS 4370: Part 2: 1993. Where additional vapour control is required an appropriate surface treatment should be applied over the completed insulated wall area (refer to 'Water Vapour Control, page 2).

DURABILITY

If correctly applied, **Kingspan Thermawall TW52 zero ODP** has an indefinite life. Its durability depends on the supporting structure and the conditions of its use.

LIMITATIONS

Kingspan Thermawall TW52 zero ODP has a gypsum plasterboard face it should therefore, not be used to isolate dampness nor be used in continuously damp or humid conditions.

RESISTANCE TO SOLVENTS, FUNGI & RODENTS

The insulation core is resistant to dilute acids, alkalis, mineral oil and petrol. It 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 **Kingspan Thermawall TW52 zero ODP**. Boards which have been in contact with harsh solvents, petrol, mineral oil or acids, or boards that have been damaged in any other way should not be used.

The insulation core and facings used in the manufacture of **Kingspan Thermawall TW52 zero ODP** resist attack by mould and microbial growth and do not provide any food value to vermin.

FIRE PERFORMANCE

The boards will achieve the result given below which enable them to be classified by the Building Regulations as being Class O rated. Further details on the fire performance of Kingspan Insulation products may be obtained from our Technical Services Department (see rear cover).

Test	Result
BS 476: Part 6: 1989 (Fire Propagation Test)	Index of performance (I) not exceeding 12 and sub-index (I1) not exceeding 6.
BS 476: Part 7: 1997 (Surface Spread of Flame Test)	Class 1 rating

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) 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

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:



UK: – Telephone: +44 (0) 870 850 8555
– Fax: +44 (0) 1544 387 278
– 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) 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

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).



Kingspan Insulation

Pembridge, Leominster, Herefordshire HR6 9LA, UK
Castleblayney, County Monaghan, Ireland

www.insulation.kingspan.com