

## ACOUSTIC PERFORMANCE

### Party Walls

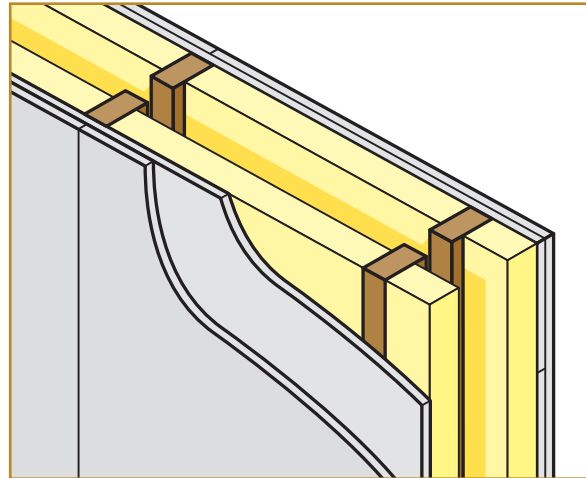
Part E Building Regulations July 2003 call for a minimum 45dB airborne sound insulation (plus Ctr correction factor for low frequency noise) in party walls. The following constructions incorporating any Timber Frame insulation product will comply with this requirement through the Robust Detail system

Note: All Timber Frame Products greater than 60mm will conform to Robust Detail specification E-WT-1 and E-WT-2 and can therefore be used in these constructions.

### Twin Timber Frames without cavity sheathing board

#### Robust Detail E-WT-1

2 layers of 12.5mm plasterboard nominally 22kg/m<sup>2</sup> (typically 19mm Gyproc Plank plus 12.5mm Gyproc WallBoard) with joints staggered each side of timber frame with 90mm Frame Batt 32 each side.

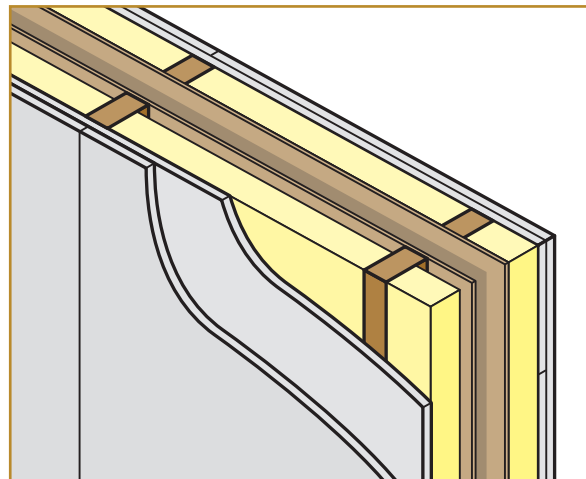


UNSHEATHED CONSTRUCTION			
Method of compliance: Robust detail			
Insulation thickness (mm)	Robust detail	Test performance range dB	Mean performance range dB
90	E-WT-1	47-65	55

### Twin Timber Frames with cavity sheathing board

#### Robust Detail E-WT-2

2 layers of 12.5mm plasterboard nominally 22kg/m<sup>2</sup> (typically 19mm Gyproc Plank plus 12.5mm Gyproc WallBoard) with joints staggered each side of timber frame with 90mm Frame Batt 32 each side. Sheathing board fixed to internal (cavity) side of each stud frame.



SHEATHED CONSTRUCTION			
Method of compliance: Robust detail			
Insulation thickness (mm)	Robust detail	Test performance range dB	Mean performance range dB
90	E-WT-2	48-64	54

## PACKAGING AND PHYSICAL DIMENSIONS

Frame batt 32						
Thermal conductivity 0.032 W/m.K						
Order code	R-value m <sup>2</sup> .K/W	Thickness (mm)	Pack area m <sup>2</sup>	Batts per pack	Packs per pallet	m <sup>2</sup> per pallet
13657	1.56	50	6.03	9	16	96.48
13656	2.81	90	3.35	5	20	67.00

Frame batt 33						
Thermal conductivity 0.033 W/m.K						
Order code	R-value m <sup>2</sup> .K/W	Thickness (mm)	Pack area m <sup>2</sup>	Batts per pack	Packs per pallet	m <sup>2</sup> per pallet
13636	2.88	95	4.02	6	20	80.40

Frame batt 34						
Thermal conductivity 0.034 W/m.K						
Order code	R-value m <sup>2</sup> .K/W	Thickness (mm)	Pack area m <sup>2</sup>	Batts per pack	Packs per pallet	m <sup>2</sup> per pallet
13879	4.12	140	4.02	6	16	64.32

Frame batt 35						
Thermal conductivity 0.035 W/m.K						
Order code	R-value m <sup>2</sup> .K/W	Thickness (mm)	Pack area m <sup>2</sup>	Batts per pack	Packs per pallet	m <sup>2</sup> per pallet
13659	2.86	100	5.36	8	16	85.76
13658	4.29	150	4.02	6	16	64.32

Frame batt 40						
Thermal conductivity 0.040 W/m.K						
Order code	R-value m <sup>2</sup> .K/W	Thickness (mm)	Pack area m <sup>2</sup>	Batts per pack	Packs per pallet	m <sup>2</sup> per pallet
13718	3.50	140	5.36	8	24	128.64



All Roll product widths are split x 570mm.

All Batt products are 570mm wide and 1175mm in length.

Frame batt 43						
Thermal conductivity 0.043 W/m.K						
Order code	R-value m <sup>2</sup> .K/W	Thickness (mm)	Pack area m <sup>2</sup>	Batts per pack	Packs per pallet	m <sup>2</sup> per pallet
13677	2.09	90	8.04	12	24	192.96
13674	3.26	140	5.36	8	24	128.64

Frame roll 35						
Thermal conductivity 0.035 W/m.K						
Order code	R-value m <sup>2</sup> .K/W	Thickness (mm)	Length (m)	Pack area m <sup>2</sup>	Packs per pallet	m <sup>2</sup> per pallet
13777	2.57	90	5.30	6.04	18	108.72

Frame roll 40						
Thermal conductivity 0.040 W/m.K						
Order code	R-value m <sup>2</sup> .K/W	Thickness (mm)	Length (m)	Pack area m <sup>2</sup>	Packs per pallet	m <sup>2</sup> per pallet
13822	2.25	90	10.13	11.55	24	277.20
13717	3.50	140	6.50	7.41	24	177.84

### VARIO KM DUPLEX UV

Vario KM Duplex UV is the next generation vapour control membrane for use in existing and new build roof and wall constructions, with the added benefit of bringing excellent air leakage performance to the building envelope.

It consists of an innovative nylon based membrane, which provides more flexible vapour control than low permeability polythene films which can trap moisture in the assembly during the certain seasonal conditions. By absorbing water from the air and thereby opening molecular pores, Vario changes its vapour permeability with the ambient humidity conditions. Vario film has a thickness of 50µm, combined with low flammability.

For more information, please contact Iover Technical Support on 0115 945 1143.



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# Timber Frame Batts & Rolls

CI/Sfb | (21.9) Km1 | (K2) |  
Ref: TFP003 | November 2008

High performance glass mineral wool insulation with excellent thermal, acoustic and fire properties, designed to meet Part L and Part E Building Regulations (England and Wales) and sections 5 & 6 (Scotland).

### DESCRIPTION

Unfaced, non-combustible glass mineral wool supplied in batt or roll form in a range of thermal performances. The products are made in 570mm widths compatible with timber frames at 600mm centres and are self-supporting between timber studs or rafters without the need for additional fixings. The batt products are of modular length to suit standard domestic storey height with minimal or no cutting.

### DURABILITY

- Odourless, inert and fully compatible with all standard building materials and components
- Will not accelerate corrosion of steel, copper or aluminium
- Will not sustain vermin or promote the growth of mould, fungi or bacteria
- Will not slump or consolidate in normal building applications

### BENEFITS

- Meets the requirements of Part E Building Regulations (England and Wales) under the Robust Details for party walls
- Assists Building Regulations Part L 2006 compliance
- Meets Section 5 & 6 (Scotland) Building Regulations
- Provides a simple and cost effective thermal and acoustic solutions for warm roof applications
- Easy to install
- Long product life - will not age
- Will tolerate structural movement and settlement

### STANDARDS

Timber Frame Batts and Rolls are manufactured under BSI Quality Management Standard BS EN ISO 9001:2000.



### FIRE PERFORMANCE

Made from inherently non-combustible materials, Timber Frame Batts and Rolls are completely fire safe, achieving a Euroclass A1 fire rating when classified in accordance with BS EN 13501-1.

### ENVIRONMENTAL INFORMATION

Timber Frame Batts and Rolls are made from glass mineral wool, one of the most environmentally friendly materials available.

### Sustainable

Timber Frame insulation is manufactured from silica sand, the earth's most abundantly occurring mineral and a sustainable, infinite resource.

### Recyclable

Approximately 80% of the raw material used in the production of Iover Timber Frame insulation is recycled, far more than any comparable product. The recycled material can be post-consumer glass (from housing re-generation projects) or waste glass from flat glass manufacture, which would otherwise go to landfill.

### Environmental

The manufacturing process does not use or contain CFC's, HCFC's or other damaging gases - nor has it ever. In addition, the unique resilience of Iover glass mineral wool enables high compression packing which means more insulation in a smaller space than almost any other insulant. The result is better vehicle utilisation, reducing the environmental impact of transportation.

### EcoHomes/Sustainable Homes

Timber Frame Batts and Rolls achieve full credit under BRE EcoHomes performance for zero Ozone Depletion Potential (ODP) and a Global Warming Potential (GWP) of zero.



**ISOVER**

The World's Leading Acoustic and Thermal Insulation



## BUILDING REGULATIONS COMPLIANCE

### U-values

#### England and Wales - Part L 2006

New build properties: The required U-value for roof, wall and floor elements will be decided by the designer based on a whole-building 'SAP 2005' computer assessment of carbon emissions. The U-value can vary depending upon several factors, including air leakage rate and heating fuel type. Extension work to existing buildings: There are specified U-values for newly constructed elements in an extension.

#### Scotland - Section 6

There are two methods of demonstrating compliance, of which the Elemental Method, with stipulated U-values for roof, wall and floor elements, is the simplest. This method is also suitable for extensions.

	England and Wales		Scotland	
Element	Isover recommended U-values for new buildings (W/m <sup>2</sup> .K) <sup>(1)</sup>	Actual U-values for extensions (W/m <sup>2</sup> .K)	Elemental U-values for new dwellings (W/m <sup>2</sup> .K)	Actual U-values for extensions (W/m <sup>2</sup> .K)
Pitched roof-insulation at ceiling level	0.13	0.16	0.16	0.16
Pitched roof-insulation at rafter level	0.20	0.20	0.16	0.20
Walls	0.30 to 0.25	0.30	0.25 / 0.22 <sup>(2)</sup>	0.27

(1) Likely to give Part L compliance with a sensible balance of other measures.  
(2) Depending upon primary heating package.

### Air Permeability

Parts L1A and L2A 2006 introduce limits for 'air tightness' as a critical factor in improving the energy performance of the building. As a consequence, air pressure testing of the building at 'pre-completion' stage is now generally required. For dwellings, this will be on a sample of houses, with a frequency of tests depending upon several factors, such as size of site (number of plots) and use of 'accredited construction details'. Part L stipulates a limiting air permeability of 10m<sup>3</sup>/hr/m<sup>2</sup> (50 Pa), which, with a sensible balance of other energy saving measures, such as wall U values of 0.30 W/m<sup>2</sup>.K or better, will deliver the required carbon emissions reductions target under Part L.

#### Vario KM Duplex UV

The air permeability of the external envelope of timber framed buildings can be significantly improved by the use of Vario KM Duplex UV membrane fixed to the stud framework before applying the Gyproc WallBoard finish.

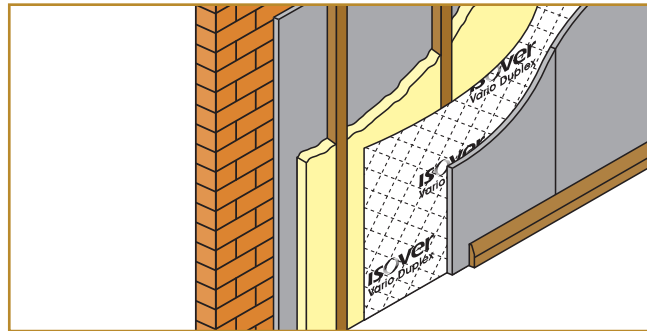
The Vario system, including associated tapes and sealants, provides a proven solution to achieving an excellent air permeability performance, reducing heat loss by air leakage through the building envelope.

Unlike traditional vapour check polythene, Vario breathes to provide a drying function to the newly erected timber frame allowing trapped moisture to escape from the construction, reducing the risk of damage caused by retained moisture. The Vario membrane behaves like the human skin: in case of sweating, it opens its pores. Since it also fulfills the function of a vapour retarder, Vario supports the use of untreated timbers.

## THERMAL PERFORMANCE AND U-VALUES - EXTERNAL WALLS

### Insulation option of Frame Batt 32, Frame Batt 34, Frame Batt 40 or Frame Batt 43

External wall consisting of facing brick and a nominal 50mm cavity with an OSB sheathing board fixed to the outside of timber studs at 600mm centres. Proprietary breather membrane (reflective grade optional) fixed to the OSB board in the brickwork cavity. Stud framework filled with Isover insulation, and with Vario KM Duplex UV membrane fixed to the inner face of the studs. Wall lining finish of Gyproc WallBoard.



Product	Stud size	U-value		U-value with additional reflective breather membrane in brickwork cavity	
		12.5% lower timber fraction	15% default timber fraction	12.5% lower timber fraction	15% default timber fraction
Frame Batt 32	90mm	0.36	0.38	0.32	0.33
Frame Roll 43	140mm	0.31	0.31	0.27	0.28
Frame Batt 40	140mm	0.29	0.30	0.26	0.27
Frame Batt 34	140mm	0.27	0.28	0.24	0.25
Frame Batt 32 (90mm + 50mm)	140mm	0.26	0.27	0.23	0.24

**15% Default Fraction:** The default fraction for timber frame wall constructions that conform to the designs in Accredited Construction Details is 15%. This is based on 38mm studs at 600mm centres for 1 storey and 2 storey buildings, and reducing centres of 300mm and 400mm on the lower floors of 3, 4, and 5 storey buildings.

**12.5% Lower Fraction:** A lower fraction of 12.5% can be used if, in addition,

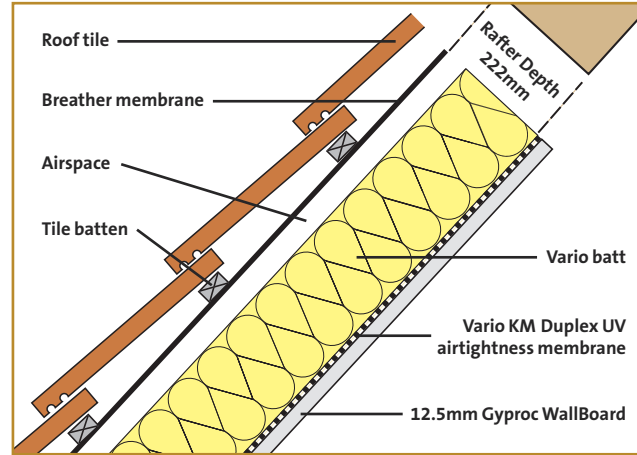
- There is a single top plate as part of the external wall panels
- The sole plate is below finished floor level
- The are no mid-height full depth noggings in external walls
- The studs at junctions where internal walls meet external walls, and any noggings are 38mm maximum depth and have continuous wall insulation behind them

## THERMAL PERFORMANCE AND U-VALUES - NEW BUILD WARM ROOF

### Insulation: Vario Batt

Solution to meet the suggested U-value of 0.20 W/m<sup>2</sup>.K.

Tiled or slated roof on tiling battens on breather membrane on 48mm thick x 222mm deep rafters. Vario Batt, installed in 2 x 100mm thickness between the rafters, leaving a 22mm airspace adjacent to the breather membrane. Vario KM Duplex UV membrane installed against the inner face of the rafters. Internal lining of Gyproc WallBoard.



Rafter depth (mm)	Insulation thickness (mm)	Ceiling lining	Ceiling membrane	U-value W/m <sup>2</sup> .K
222	Vario Batt 2 x 100	Gyproc WallBoard	Vario KM Duplex UV	0.20

### Compliance with acoustic regulations:

Sloping (warm) roof construction in new-build adjoining properties where Robust Detail party wall constructions are used (masonry or timber frame) need acoustic treatment. It is mandatory to install a minimum 100mm of mineral wool, minimum density 10kg/m<sup>3</sup>, between the rafters. All Isover timber frame products conform to this specification.

## THERMAL PERFORMANCE AND U-VALUES - LOFT CONVERSIONS

For room-in-roof loft conversions there are elemental U-value requirements for both England and Wales (Part L1B 2006) and Scotland (Section 6) of:

Sloping roof element	0.20 W/m <sup>2</sup> .K
New wall in roof space	0.30 W/m <sup>2</sup> .K

In addition to complying with elemental U-values, there are additional important considerations.

### Compliance with Part E acoustic regulations, England and Wales.

Loft conversions are a material change of use (Part L1B, Section 1, paragraph 25, g and i), which means that compliance with Part E is also obligatory. Both sloping roofs and newly constructed walls are key construction elements which need to be sound-proofed against direct sound transmission and flanking noise transmission to adjacent properties. Sections 4.2 & 4.3 of Part E advocates the adoption of new-build construction details as a means of compliance.

One method of compliance is to use the extensively tested Robust Detail specifications, where all appropriate sloping roof details incorporate a layer of 100mm (minimum) mineral wool, minimum density 10kg/m<sup>3</sup>, between the rafters to minimise acoustic transfer via the roof element.

A minimum 100mm thickness of mineral wool, minimum density 10kg/m<sup>3</sup>, is also extensively specified throughout Part E where high levels of acoustic absorbency is needed. All Isover glass mineral wool products for timber frame applications conform to this specification, and will provide compliance with both Part L (thermal) and Part E (acoustic).



### Moisture Control within the upgraded roof and wall elements.

Existing rafters are generally untreated softwood timbers, that is, without any rot or mould inhibiting protection, which is acceptable where these rafters are exposed in a ventilated loft space. However, where the rafters are sealed with a ceiling finish as part of the loft upgrade, consideration needs to be given to the effect of moisture trapped within the construction.

Conventionally this is addressed by maintaining a ventilated airspace between the back of the insulation and the outer roof covering, and will help when moisture vapour pressure is from inside to out. In summer conditions, however, moisture vapour can be driven inwards. The use of Vario KM Duplex UV membrane as a lining between the plasterboard and insulation will ensure that the sealed roof construction will be fully breathable under all climatic and seasonal conditions.

Isover glass wool insulation is vapour permeable and, in conjunction with the Vario membrane, brings an assured and controlled release of moisture vapour, thereby removing conditions likely to cause problems with untreated timber.

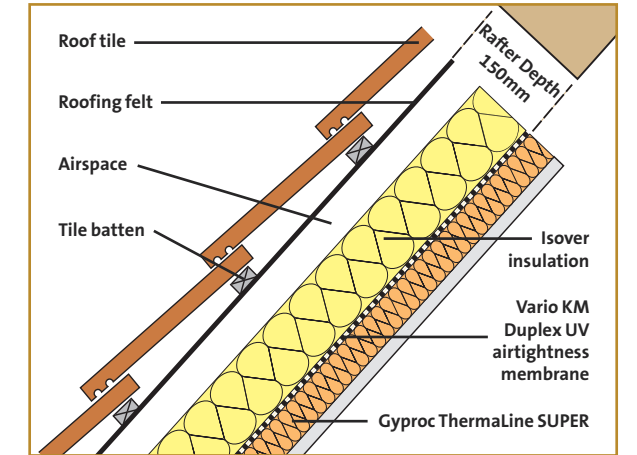
## CONSTRUCTIONS TO MEET THE REQUIRED SLOPING ROOF U-VALUE 0.20 W/m<sup>2</sup>.K

Construction type (See diagrams below)	Rafter depth (mm)	Tiling underlay	Airspace between underlay & insulation (mm)	Counter batten on top of underlay	Insulation	Internal air tightness / moisture control membrane	Ceiling lining	U-value
Construction A	150	Conventional felt	50	No	100mm Frame Batt 35 or 100mm Frame Roll 35	Vario KM Duplex UV	65mm Gyproc ThermaLine SUPER	0.20
Construction B	100	Conventional breather membrane	None	Yes				0.20

### Loft Conversion - Construction A

Maintaining a 50mm airgap between the roofing felt and the insulation.

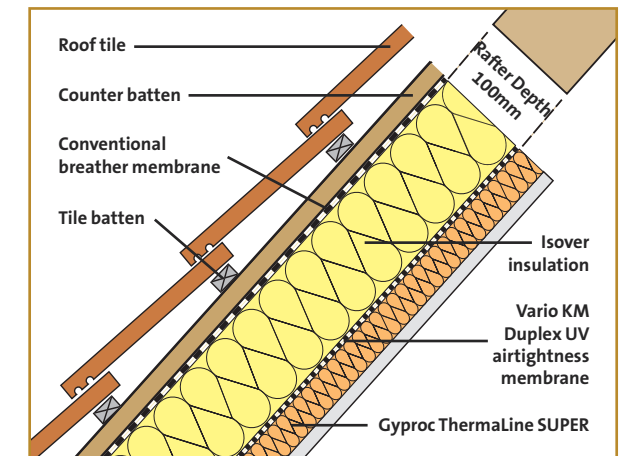
Tiled or slated roof on tiling battens on roofing felt on 48mm x 150mm softwood rafters. Frame Batt 35 or Frame Roll 35, 100mm thickness, installed between the rafters maintaining a 50mm ventilated airspace beneath the roofing felt. Vario KM Duplex UV membrane installed against the inner face of the rafters. Internal lining of 65mm Gyproc ThermaLine SUPER.



### Loft Conversion - Construction B

Installing conventional breather membrane beneath roofing tiles - no airgap required between membrane and insulation.

Tiled or slated roof on tiling battens on counter battens (in the same plane as the rafters) on conventional breather membrane fixed to 48mm x 100mm softwood rafters. Frame Batt 35 or Frame Roll 35, 100mm thickness, installed between the rafters - no airgap between breather membrane and Isover insulation. Vario KM Duplex UV membrane fixed to inner face of the rafters. Internal lining of 65mm Gyproc ThermaLine SUPER.



### Room-in-a-roof wall construction in loft conversion.

A new wall in a loft conversion is classed as a new thermal element (Approved Document L1B, paragraph 50) and would require a U-value of 0.30 W/m<sup>2</sup>.K in accordance with table 4 column (a), on page 22 of Part L 1 B. New timber stud wall consisting of vertical studs at 600mm centres. Isover insulation push-fitted in the stud framework. Vario KM Duplex UV membrane fixed to inner face of studs. Internal lining of 12.5mm Gyproc WallBoard.

Vertical stud depth (mm)	Insulation	Internal air tightness / moisture control membrane	Internal wall finish	U-value
100	150mm Frame Batt 35	Vario KM Duplex UV	12.5mm Gyproc WallBoard	0.27 W/m <sup>2</sup> .K

