AIM Thermal Liner Units

Insulated liner units for improving the thermal performance of walls

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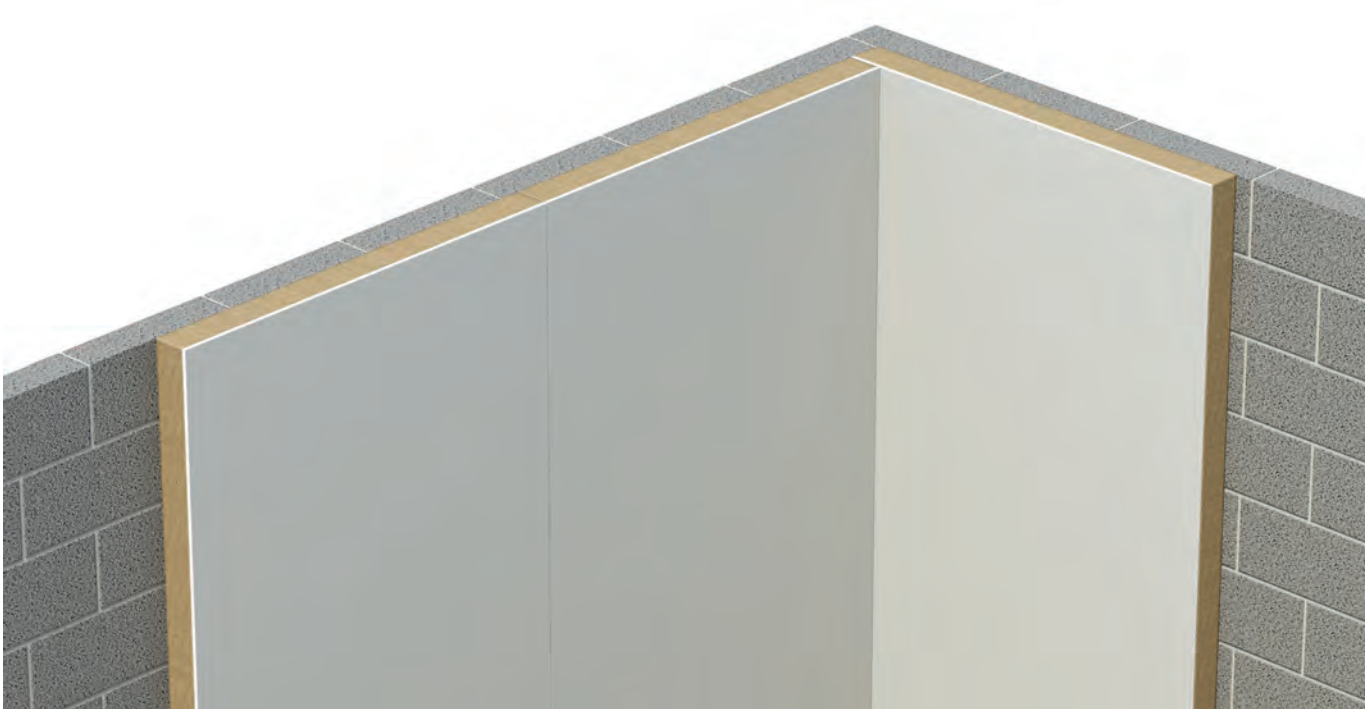

AIM Liner Units, manufactured from plasterboard bonded to insulation, are used to provide an insulated internal lining for walls and ceilings. They provide considerably enhanced insulation, improved sound reduction and a smooth plasterboard internal finish.

Specification

- Available with optional aluminium foil vapour barrier between plasterboard and insulation
- Plasterboard satisfies the requirements of BS 1230
- Surface of the plasterboard complies with Class 0 of the Building Regulations
- Plasterboard is incombustible to BS 476 part 4, rated Class 1 Surface Spread of Flame to BS 476 part 7
- Plasterboard achieves index of performance (I) not exceeding 12 and sub-index(i1) not exceeding 6 (both sides) to BS 476 part 6
- The gypsum plaster facing material should not be used in continuously damp conditions or externally on a building
- Global warming potential = zero

Choice of Insulation

Lamella (LAM)

Lamellas are made from high density rock wool slab, which is cut into blocks and rotated through 90 degrees before being bonded to the plasterboard.

Lamella rock wool is incombustible and is especially suitable for acoustic applications.

Extruded Polystyrene (XPS)

Small, closed cell extruded polystyrene for optimum insulation, high compressive strength and resistance to moisture.

Expanded Polystyrene (EPS)

Versatile expanded polystyrene for optimum value and light weight.

Polyurethane (PUR)

Polyurethane foam has very low thermal conductivity and is particularly suitable for applications where space is at a premium.

Other insulation types can be supplied.

Specialist plasterboards are available.

Installation Details and U values
Preparation

The ceiling lining should be in place prior to fitting AIM Liner Units. Wall mounted services must be installed to allow for the extra depth taken by the units. Where the Liner Units are being fitted to an existing building the surfaces should be relatively clean and free of flaking materials, especially if the adhesive fixing method is to be used. AIM Liner Units will not accept any structural fittings, so where these are required provision must be made to connect them to the structural support wall.

Adhesive Fixing

If the background is suitable AIM Liner Units can be directly fixed to the existing wall by a suitable gap filling adhesive or bonding compound. Suitable products are manufactured by Ardex, British Gypsum, Knauf, Redland, and others.

AIM Liner Units - U values of typical constructions (W/m²K)
Calculated in accordance with BS EN ISO 6946 : 1997 and Approved Document L2

Insulation Thickness	Solid brick 225mm --> AIM Liner Unit				Brick outer --> 50mm cavity --> brick or block inner (Đ=0.59W/mK) --> AIM Liner Unit				Brick outer --> 50mm cavity --> lightweight block inner (Đ=0.19W/mK) --> AIM Liner Unit			
	LAM	XPS	EPS	PUR	LAM	XPS	EPS	PUR	LAM	XPS	EPS	PUR
17	1.10	0.99	1.03	0.77	0.91	0.83	0.86	0.68	0.70	0.66	0.67	0.55
20	1.02	0.91	0.95	0.70	0.86	0.78	0.81	0.62	0.67	0.62	0.64	0.52
30	0.83	0.73	0.76	0.53	0.72	0.64	0.67	0.49	0.58	0.53	0.55	0.42
40	0.70	0.60	0.64	0.43	0.62	0.54	0.57	0.40	0.52	0.46	0.48	0.35
50	0.61	0.52	0.55	0.36	0.54	0.47	0.50	0.34	0.46	0.41	0.43	0.31
60	0.53	0.45	0.48	0.31	0.49	0.42	0.44	0.30	0.42	0.37	0.39	0.27
70	0.48	0.40	0.43	0.27	0.44	0.37	0.40	0.26	0.38	0.33	0.35	0.24
80	0.43	0.36	0.38	0.25	0.40	0.34	0.36	0.23	0.35	0.31	0.32	0.22
90	0.39	0.34	0.35	0.22	0.37	0.32	0.33	0.21	0.33	0.29	0.30	0.20
100	0.36	0.31	0.32	0.20	0.34	0.29	0.30	0.19	0.31	0.27	0.28	0.18
110	0.34	0.28	0.30	0.19	0.32	0.27	0.28	0.18	0.29	0.25	0.26	0.17
120	0.31	0.26	0.28	0.17	0.30	0.25	0.26	0.17	0.27	0.23	0.24	0.16

Notes to table

1. The table gives the U value of a liner unit primarily attached by adhesive, but also with 3 mechanical fasteners at the base of each board and 2 mechanical fasteners at the top of each board.

2. The calculations assume that there are no air gaps in the insulation layer. This means that the insulation must be installed to butt tightly.

AIM liner Units, Board length 2400m, Board width 1200m, Board facing 12.5mm plasterboard Đ = 0.25 W/mK

		Lamella rock wool Conductivity 0.044 W/mK			**Extruded polystyrene** Conductivity 0.030 W/mK			**Expanded polystyrene** Conductivity 0.038 W/mK			**Polyurethane** Conductivity 0.023 W/mK		
Thickness													
Unit	Insulation	Thermal Resistance R Value	Board Weight kg	Weight / sq metre	Thermal Resistance R Value	Board Weight kg	Weight / sq metre	Thermal Resistance R Value	Board Weight kg	Weight / sq metre	Thermal Resistance R Value	Board Weight kg	Weight / sq metre
29.5	17	0.452	28.84	10.01	0.552	25.41	8.82	0.513	24.67	8.57	0.839	25.41	8.82
32.5	20	0.520	29.70	10.31	0.637	25.67	8.91	0.592	24.80	8.61	0.975	25.67	8.91
42.5	30	0.748	32.58	11.31	0.923	26.53	9.21	0.855	25.24	8.76	1.429	26.53	9.21
52.5	40	0.975	35.46	12.31	1.209	27.40	9.51	1.118	25.67	8.91	1.884	27.40	9.51
62.5	50	1.202	38.34	13.31	1.494	28.26	9.81	1.382	26.10	9.06	2.339	28.26	9.81
72.5	60	1.429	41.22	14.31	1.780	29.12	10.11	1.645	26.53	9.21	2.793	29.12	10.11
82.5	70	1.657	44.10	15.31	2.066	29.99	10.41	1.908	26.96	9.36	3.248	29.99	10.41
92.5	80	1.884	46.98	16.31	2.352	30.85	10.71	2.171	27.40	9.51	3.702	30.85	10.71
102.5	90	2.111	49.86	17.31	2.566	31.72	11.01	2.434	27.83	9.66	4.157	31.72	11.01
112.5	100	2.339	52.74	18.31	2.844	32.58	11.31	2.697	28.26	9.81	4.611	32.58	11.31
122.5	110	2.566	55.62	19.31	3.121	33.44	11.61	2.961	28.69	9.96	5.066	33.44	11.61
132.5	120	2.793	58.50	20.31	3.399	34.31	11.91	3.224	29.12	10.11	5.520	34.31	11.91

Certain surfaces, such as high density smooth concrete or high suction masonry may require priming. The adhesive manufacturer's guidelines should be followed throughout. The adhesive should be applied in 200mm wide bands around the perimeter, and down the centre of the Units. The adhesive must be applied to the back of the Units to achieve a good key with the insulation, and should also be applied to the wall surface. The Liner Units are then offered up to the supporting wall and tapped into position.

When the adhesive has hardened, secondary mechanical fixings are driven through the AIM Liner Units into the supporting wall. Two fixings are used at the top of the boards and three at the base, under the skirting board line.

Mechanical Fixing to Metal Framing

AIM Liner Units may be fixed using a proprietary frame system (offered by most plasterboard manufacturers). The bearing surface of the metal frame should be at least 50mm wide and should be fixed to the existing wall in accordance with the manufacturer's instructions.

The frame uprights should be positioned to coincide with the vertical joints between adjacent liner boards and also at the centre of each board, (i.e. at maximum centres of 600mm). The liner units are then secured to the metal frame using self drilling screws designed for fixing plasterboard and sufficiently long to ensure 15mm penetration of the frame.

Fixing should be at a maximum of 200mm centres along all frame positions and at approx. 12mm from both long edges of the board. When the flatness of the final surface is critical, for example where ceramic tiles are to be directly adhered to the plasterboard, it is recommended that two metal studs are used back-to-back at the joints between adjacent boards. The extra bearing surfaces help to prevent any distortion of the insulation which may occur if the fixings are over tightened.

Mechanical Fixing to Timber Framing or Battens

All four edges of the AIM Liner Units should be supported by battens or timber framing and a further vertical support is required at the centre of the units. The battens must allow a nail penetration of at least 25mm and should be at least 50mm wide to allow sufficient bearing.

When the flatness of the final surface is critical, for example where ceramic tiles are to be directly adhered to the plasterboard, it is recommended that two timber battens are used back-to-back (or a single 100mm wide batten) at the joints between adjacent boards.

The AIM Liner Units are fixed by nails which must be long enough to allow at least 25mm penetration into the timber. Fixing should be at a maximum of 150mm centres along all batten positions and at least 12mm from the edges of the board. Nails should not be overdriven.