

## AIM FLOOR UNITS

December 2003

### Choice of Insulation -

#### LAMELLA.

Lamellas are made from high density rock wool slab, which is cut into blocks and rotated through 90 degrees before being bonded to the P5 chipboard facing. Lamella rock wool is incombustible and is especially suitable for acoustic applications. Lamella floor units have been acoustically tested (test report is available on request).

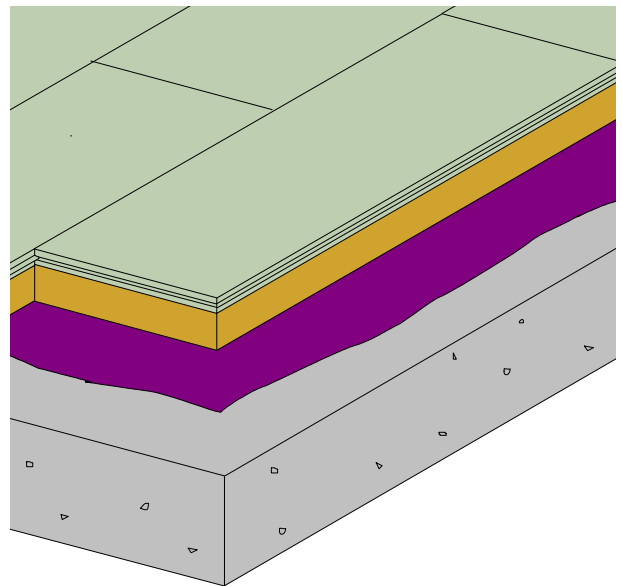
#### EXTRUDED POLYSTYRENE (XPS)

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 available in EPS100 (was HDN) for normal traffic areas or EPS70 (was SDN) for light traffic areas.

### Flooring grade T&G P5 chipboard - bonded to AIM insulation slab.



### Introduction

AIM Floor Units are manufactured from tongue & groove flooring grade chipboard bonded to insulation. The Units provide an integrated fully floating floor with resilient layer. The P5 chipboard is installed with all T&G joints tightly glued, but with no direct contact with the sub floor, and this forms the floating layer. The insulation provides the resilient layer, offering thermal resistance, acoustic damping and absorption together with resistance to compression from downward loading.

### Application

AIM Floor Units provide thermally and acoustically insulated moisture resistant chipboard floor finish. The units are simple to install and will take up minor imperfections in the surface on which they are to be laid. AIM Floor Units provide excellent thermal insulation and are suitable for both suspended floors and for ground floors. They can be installed quickly and easily, with no need to raise existing floors, and offer minimum disruption to other trades or to the existing structure. The Floor Units are installed over a structural floor for new build or conversions.

### Acoustic

Lamella Floor Units provide airborne and impact sound reduction to help meet the Building Regulations - contact AIM for further details.

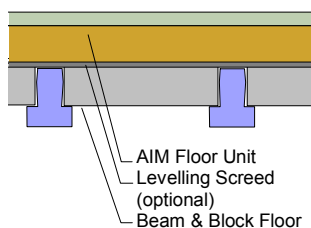
### Fire Rated Timber Floor

Where a one hour fire rating is required for a timber joist floor, the AIM FireFloor System 2 may be used to achieve this. This system is applied from above joist and does not require a fire rated ceiling. See data sheet - "AIM Fire Floor System 2".

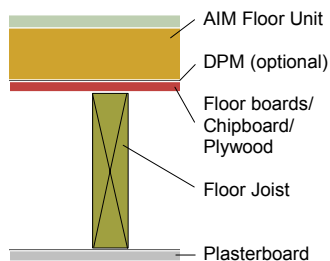
AIM Floor Units			Board length 2400 mm			Board width 600 mm					
Facing	Overall Unit Thickness mm	Insulation Thickness mm	Lamella rock wool			Extruded Polystyrene			Expanded Polystyrene		
			Thermal Resistance R Value m <sup>2</sup> K/W	Board Weight kg	Weight / sq metre kg/m <sup>2</sup>	Thermal Resistance R Value m <sup>2</sup> K/W	Board Weight kg	Weight / sq metre kg/m <sup>2</sup>	Thermal Resistance R Value m <sup>2</sup> K/W	Board Weight kg	Weight / sq metre kg/m <sup>2</sup>
18 mm chipboard  Conductivity 0.14 W/mK	35	17	0.515	22.9	15.9	0.715	20.9	14.5	0.576	20.7	14.4
	38	20	0.583	23.3	16.2	0.818	21.0	14.6	0.655	20.8	14.4
	48	30	0.810	24.9	17.3	1.163	21.5	14.9	0.918	21.1	14.6
	58	40	1.038	26.5	18.4	1.508	21.9	15.2	1.181	21.4	14.8
	68	50	1.265	28.1	19.5	1.853	22.3	15.5	1.444	21.7	15.1
	78	60	1.492	29.7	20.6	2.198	22.8	15.8	1.708	22.0	15.3
	88	70	1.719	31.3	21.7	2.542	23.2	16.1	1.971	22.3	15.5
	98	80	1.947	32.8	22.8	2.887	23.6	16.4	2.234	22.6	15.7
	108	90	2.174	34.4	23.9	3.232	24.1	16.7	2.497	22.9	15.9
	118	100	2.401	36.0	25.0	3.577	24.5	17.0	2.760	23.2	16.1
	128	110	2.629	37.6	26.1	3.922	24.9	17.3	3.023	23.5	16.3
	138	120	2.856	39.2	27.2	4.267	25.3	17.6	3.286	23.8	16.5
	148	130	3.083	40.8	28.3	4.612	25.8	17.9	3.550	24.1	16.7
	158	140	3.310	42.3	29.4	4.957	26.2	18.2	3.813	24.4	16.9
	168	150	3.538	43.9	30.5	5.302	26.6	18.5	4.076	24.7	17.2
	178	160	3.765	45.5	31.6	5.647	27.1	18.8	4.339	25.0	17.4
	188	170	3.992	47.1	32.7	6.000	27.5	19.1	4.602	25.3	17.6

Typical Constructions

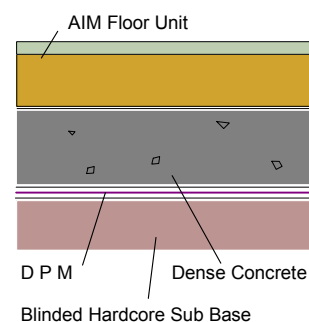
BEAM & BLOCK FLOOR



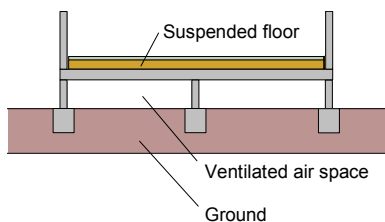
TIMBER FLOOR WITH CEILING



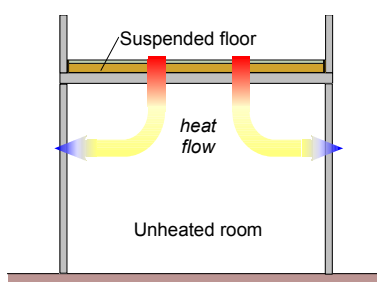
CONCRETE FLOOR



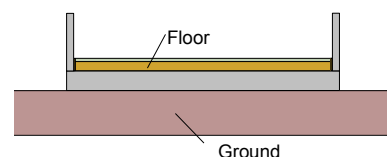
SUSPENDED GROUND FLOOR



SUSPENDED INTERNAL FLOOR



ON GROUND FLOOR



LAMELLA

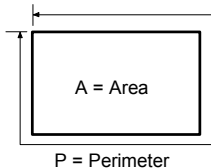
**P/A ratios for suspended ground floors to achieve 0.25 W/m<sup>2</sup>K U value, with Lamella Floor Units**

Lamella Thickness mm	Concrete beam and block floor		Reinforced Concrete slab 150mm thick	
	Ventilation opening area per unit perimeter of underfloor space m <sup>2</sup> /m			
	0.0015	0.003	0.0015	0.003
	P/A	P/A	P/A	P/A
	RATIO	RATIO	RATIO	RATIO
17	0.12	0.11	0.12	0.11
30	0.13	0.12	0.13	0.12
40	0.15	0.14	0.14	0.13
50	0.17	0.15	0.16	0.15
60	0.19	0.18	0.18	0.17
70	0.22	0.21	0.21	0.20
80	0.26	0.24	0.25	0.23
90	0.33	0.30	0.31	0.28
100	0.42	0.38	0.39	0.35

**P/A ratios for on ground floors to achieve 0.25 W/m<sup>2</sup>K U value, with Lamella Floor Units**

Lamella thickness mm	30	40	50	60	70
P/A ratio	0.15	0.15	0.20	0.25	0.25
Lamella thickness mm	80	90	100	110	120
P/A ratio	0.30	0.35	0.45	0.60	0.70

**P/A RATIO (all tables)**  
Plan of Building



**U<sub>f</sub> value (W/m<sup>2</sup>K) of suspended floor with Lamella Floor Units - internal unheated room underneath**

Lamella Thickness	Joisted timber with ceiling under	Concrete beam and block floor	Reinforced Concrete slab 150mm thick
0	1.24	2.08	2.38
17	0.76	1.00	1.07
30	0.62	0.77	0.81
40	0.54	0.66	0.69
50	0.48	0.57	0.59
60	0.44	0.51	0.52
70	0.40	0.45	0.47
80	0.36	0.41	0.42
90	0.34	0.38	0.39
100	0.31	0.35	0.35

EXTRUDED POLYSTYRENE (XPS)

**P/A ratios for suspended ground floors to achieve 0.25 W/m<sup>2</sup>K U value, with Extruded Polystyrene Floor Units**

Extruded Polystyrene Thickness mm	Concrete beam and block floor		Reinforced Concrete slab 150mm thick	
	Ventilation opening area per unit perimeter of underfloor space m <sup>2</sup> /m			
	0.0015	0.003	0.0015	0.003
	P/A	P/A	P/A	P/A
	RATIO	RATIO	RATIO	RATIO
17	0.13	0.12	0.13	0.12
30	0.16	0.15	0.15	0.14
40	0.19	0.18	0.19	0.17
50	0.24	0.23	0.23	0.22
60	0.33	0.31	0.31	0.29
70	0.50	0.45	0.46	0.42
80	0.89	0.79	0.79	0.71
90	1.00	1.00	1.00	1.00
100	1.00	1.00	1.00	1.00

**P/A ratios for on ground floors to achieve 0.25 W/m<sup>2</sup>K U value, with Extruded Polystyrene Floor Units**

XPS thickness mm	30	40	50	60	70
P/A ratio	0.20	0.25	0.30	0.40	0.50
XPS thickness mm	80	90	100		
P/A ratio	0.75	1.00	1.00		

**U<sub>f</sub> value (W/m<sup>2</sup>K) of suspended floor with Extruded Polystyrene Floor Units - internal unheated room underneath**

XPS Thickness	Joisted timber with ceiling under	Concrete beam and block floor	Reinforced Concrete slab 150mm thick
0	1.24	2.08	2.38
17	0.66	0.84	0.88
30	0.51	0.61	0.63
40	0.43	0.50	0.52
50	0.38	0.43	0.44
60	0.33	0.37	0.38
70	0.30	0.33	0.34
80	0.27	0.30	0.30
90	0.25	0.27	0.27
100	0.23	0.25	0.25

EXPANDED POLYSTYRENE (EPS)

**P/A ratios for suspended ground floors to achieve 0.25 W/m<sup>2</sup>K U value, with Expanded Polystyrene Floor Units**

Expanded Polystyrene Thickness mm	Concrete beam and block floor		Reinforced Concrete slab 150mm thick	
	Ventilation opening area per unit perimeter of underfloor space m <sup>2</sup> /m			
	0.0015	0.003	0.0015	0.003
	P/A	P/A	P/A	P/A
	RATIO	RATIO	RATIO	RATIO
17	0.12	0.11	0.12	0.11
30	0.14	0.13	0.14	0.13
40	0.16	0.15	0.16	0.14
50	0.19	0.17	0.18	0.17
60	0.22	0.20	0.21	0.19
70	0.27	0.25	0.26	0.24
80	0.35	0.32	0.33	0.30
90	0.47	0.43	0.43	0.40
100	0.70	0.62	0.63	0.56

**P/A ratios for on ground floors to achieve 0.25 W/m<sup>2</sup>K U value, with Expanded Polystyrene Floor Units**

EPS thickness mm	30	40	50	60	70
P/A ratio	0.15	0.20	0.25	0.25	0.30
EPS thickness mm	80	90	100	110	
P/A ratio	0.40	0.50	0.70	1.00	

**U<sub>f</sub> value (W/m<sup>2</sup>K) of suspended floor with Expanded Polystyrene Floor Units - internal unheated room underneath**

EPS Thickness	Joisted timber with ceiling under	Concrete beam and block floor	Reinforced Concrete slab 150mm thick
0	1.24	2.08	2.38
17	0.72	0.95	1.00
30	0.58	0.71	0.75
40	0.50	0.60	0.62
50	0.44	0.52	0.54
60	0.40	0.46	0.47
70	0.36	0.41	0.42
80	0.33	0.37	0.38
90	0.30	0.34	0.34
100	0.28	0.31	0.31

Notes to all tables

Calculated in accordance with BS EN ISO 6946 : 1997 and Approved Document L2 2002 The Building Regulations 2000. The calculations assume that there are no air gaps in the insulation layer. This means that the insulation must be installed so as to join tightly. P/A is the perimeter of the building divided by the area.

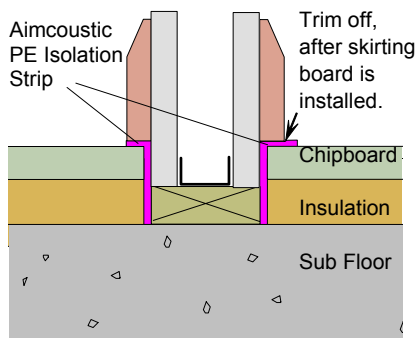
## Fixing Details

### Handling & Storage

AIM Floor Units are easy to handle, but should be treated with relative care. They should be stored in dry conditions. Should indoor storage be impossible the product should be stacked clear of the ground and covered with a stout tarpaulin. Boards which have become wet should not be installed.

### Conditioning

The Floor Units should be conditioned for two to three days prior to installation. This process must take place in the area and atmospheric condition in which they will be installed. Flooring grade chipboard will expand or contract according to moisture content; conditioning allows the chipboard surface of the floor units to adjust to the atmospheric moisture of its surroundings.



### Prevention of moisture ingress

Any significant changes in moisture content after the boards are installed will cause dimensional change in the floor units. Therefore the building must be substantially weather-tight before installing the floor units; in other words all the doors and windows must be fitted, this is also an NHBC requirement.

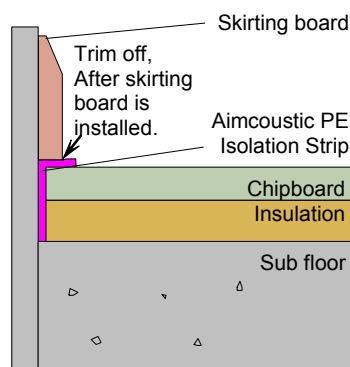
Where the AIM Floor Units are being laid on a ground floor, a polythene vapour barrier should be installed above the sub floor to prevent moisture ingress from below. During installation, the Floor Units must be protected from wet trades and water spillage; in service the Floor Units should be protected from exposure to moisture attack from above by the use of waterproof floor coverings especially in wet areas such as bathrooms and kitchens. Floor Units are not suitable for wet trade overlays.

### Expansion Gaps - general

A minimum 5mm gap should be left between the Floor Units and perimeter walls or partitions; this gap should be filled with Aimcoustic PE Isolation Strip. In order to ensure that this gap is maintained spacers should be placed between units and walls, but these must be removed after floor units have been laid. Pipes or other services penetrating the floor units must also be provided with an expansion gap.

### Expansion Gaps - Long Corridors (& other long runs)

Where the length of run of AIM Floor Units equals or exceeds 12 metres an intermediate 10mm movement joint is required, filled with two layers of Aimcoustic PE Isolation Strip, in addition to the perimeter gap. Thereafter the maximum allowable length between movement joints is 9 metres for end sections and 6 metres for intermediate sections.



### Structure and sub-floor

The sub-floor should be imperforate, where AIM Floor Units are being installed to improve airborne sound reduction. The sub floor must therefore be sound and complete, with all gaps and cracks thoroughly caulked. In the case of a timber sub-floor with ill fitting floorboards or large gaps, it is recommended that sheathing boards are laid over and completely sealed by a general building sealant, to form an airtight layer.

Partitions should be fixed directly to the sub-floor and isolated acoustically from AIM Floor Units by means of Aimcoustic PE Isolation Strip.

Whilst minor imperfections will be absorbed by the insulation, any unevenness in the sub-floor onto which AIM Floor Units are to be laid will be reflected in the finished floor levels. The sub floor then must be generally flat,

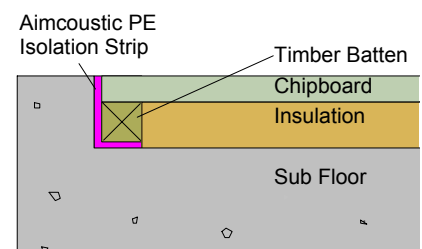
which may require a levelling screed on concrete floors or sheathing boards on timber sub-floors.

Heavy permanent fixtures should be supported directly by the sub-floor, either by direct attachment or by timber battens inserted into the insulation layer of the Floor Units directly below the fixed loading. Care must be taken not to form acoustic bridges however, and Aimcoustic PE Isolation Strip must be used to prevent direct contact between the floating layer and the building structure.

### Laying the AIM Floor Units

The Chipboard facing of AIM Floor Unit forms a "floating layer" and therefore must not come into contact with the building structure except via Aimcoustic PE Isolation Strip or the insulation. The Floor Units are not mechanically fixed to the sub floor. The AIM Floor Units should be laid brick bond fashion, with all joints staggered. The Tongue and Groove joints should all be glued.

Conduits carrying services may be accommodated by cutting away the insulation along the lines of the conduit, but the conduit must not bridge between the chipboard layer and building structure. At doorways or changes of level the edge of AIM Floor Units must be supported by a timber batten. The insulation is cut away and replaced by a timber batten which must be isolated from the sub floor and perimeter walls by Aimcoustic PE Isolation Strip.



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