

AIM OVERLAY AND UNDERLAY SYSTEM

December 2003

Introduction

The AIM Overlay and Underlay System is used to produce a 'Warm Roof' type construction in buildings with pitched roofs in excess of 15 degrees. The System provides an effective means of insulating the roof space at rafter level, thereby creating a useful warm room within the attic. The Overlay and Underlay boards are vapour permeable and should be used in conjunction with a breather membrane on the outer face, thus preventing the need for ventilation of the roof void. They can be installed directly on a timber rafter construction, or the construction may include profiled steel or timber decking. Overlay boards may be used without Underlay boards, depending on the U Value requirement. However it is preferable not to use Underlay without Overlay, to avoid any potential for condensation on the tops of the rafters.

Design Considerations

It is important to take account of potential condensation problems, when designing a Warm Roof construction. The Overlay & Underlay boards themselves have a vapour resistivity similar to air and will therefore 'breathe' satisfactorily, provided the underslating membrane is a breather membrane and not of the impervious type. It is good practice to incorporate a vapour control layer on the warm side of the insulation, particularly in areas of high humidity. If used, the vapour control layer should be overlapped at its edges and adequately sealed.

OVERLAY BOARD

Design Notes

The Compressive strength of Overlay Board exceeds 100kPa at 10% compression (i.e. more than 1 tonne /m²). However AIM Overlay Board is NOT a structural board suitable for foot traffic.

AIM Overlay Boards are not designed to add to the structural stability of the roof. The roof structure should be properly designed and fully braced, independently of the insulation.

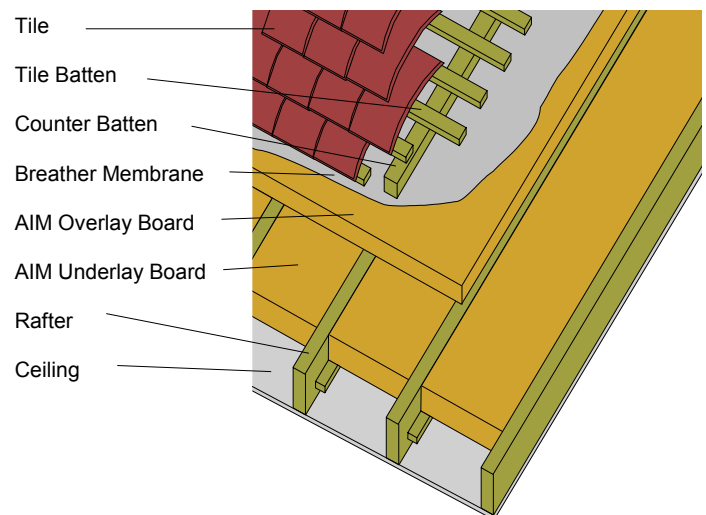
AIM Overlay Boards will resist normal wind and snow loads. However, the fixing system is very important and the type and spacing of the fixings should be specified by a reputable fixing supplier.

UNDERLAY BOARD

Board Size

Underlay boards are supplied 1140mm wide to enable them to be cut on site to suit the rafter spacing - typically into 2No. 1200 x 570mm slabs for rafters at 600mm centres, or 3No. 1200 x 380mm slabs for rafters at 400mm centres.

AIM Rock Wool Warm Roof System



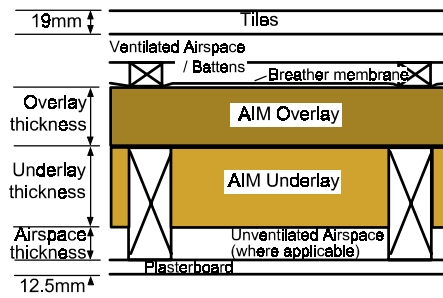
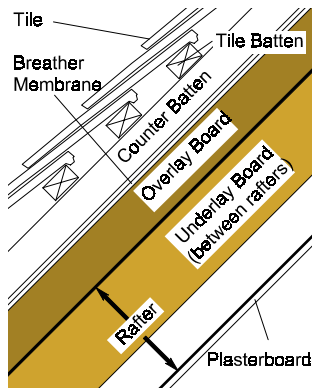
OVERLAY AND UNDERLAY SYSTEM DETAILS

	OVERLAY	UNDERLAY
Board Type	High density rigid rockwool slab	Semi-flexible rockwool slab
Board Dimensions	1200 x 1000mm	1200 x 1140mm
Board Thickness:	40, 50, 60, 70, 80, 90, 100mm	50, 60, 75, 100, 125, 150mm
Thermal Conductivity	λ 0.038 W/mK	λ 0.035 W/mK
Vapour Resistivity	7 MNs/g	7 MNs/g
Fire Performance	Class 'O' to the Building Regulations	

Acoustic Performance Overlay & Underlay boards are effective sound absorbers and also add significantly to the sound insulation properties of the roof construction

Fire Resistance

AIM Overlay and Underlay Boards are incombustible to BS 476 part 4, rated Class 1 Surface Spread of Flame to BS 476 part 7 and comply with the performance requirements of Class O of the Building Regulations.



OVERLAY BOARD

Fixing

AIM Overlay Boards should be laid directly across the rafters, starting at the eaves. A 'stop batten' should be fixed at eaves level to prevent the boards slipping down the rafters. Boards should be butted closely together and laid tissue face upwards, with the joints staggered.

The boards should be held in place by the use of 50 x 38mm counter battens laid directly above and in line with the rafters. These should be mechanically fixed through the overlay boards to the rafters at a maximum spacing of 400mm centres. On Mansard or steep pitched roofs additional 'stop battens' may be required as well as additional mechanical fixings. At ridge and valley details the Overlay Boards should be mitred to make tight butt joints.

A suitable underslating breather membrane should be laid, either under the counter battens or across them, with lap joints in accordance with normal practice. This membrane should be continuous at both ridge and valley details with a minimum 150mm overlap. A continuous plywood 'tilting board' should be fixed to the top of the fascia to carry the breather membrane over and into the gutter. Tiling battens and the final roof finish can then be fixed.

UNDERLAY BOARD

Fixing

AIM Underlay Boards should be compression fitted between rafters. It is advisable to provide continuous supports to the underside edges of the underlay boards by attaching timber battens or galvanised steel 'L' angles to the side of the rafters which should provide a bearing surface of at least 40mm on each side.

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38 mm wide rafters 400 mm rafter spacing

Overlay thickness mm	U value of roof construction (W/m²K)														
	Rafter depth (mm)														
	100					125					150				
	Underlay thickness (mm)														
	50	60	75	100	50	60	75	100	125	50	60	75	100	125	150
50	0.34	0.31	0.28	0.25	0.34	0.31	0.28	0.24	0.22	0.34	0.31	0.28	0.24	0.21	0.19
60	0.31	0.29	0.26	0.23	0.31	0.29	0.26	0.23	0.21	0.31	0.29	0.26	0.23	0.20	0.18
70	0.29	0.27	0.24	0.22	0.29	0.27	0.24	0.21	0.20	0.29	0.27	0.24	0.21	0.19	0.18
80	0.27	0.25	0.23	0.21	0.27	0.25	0.23	0.20	0.19	0.27	0.25	0.23	0.20	0.18	0.17
90	0.25	0.23	0.22	0.20	0.25	0.23	0.22	0.19	0.18	0.25	0.23	0.22	0.19	0.17	0.16
100	0.23	0.22	0.20	0.19	0.23	0.22	0.20	0.18	0.17	0.23	0.22	0.20	0.18	0.16	0.15

38 mm wide rafters 600 mm rafter spacing

Overlay thickness mm	U value of roof construction (W/m²K)														
	Rafter depth (mm)														
	100					125					150				
	Underlay thickness (mm)														
	50	60	75	100	50	60	75	100	125	50	60	75	100	125	150
50	0.33	0.30	0.27	0.24	0.33	0.30	0.27	0.23	0.21	0.33	0.30	0.27	0.23	0.20	0.19
60	0.30	0.28	0.25	0.23	0.30	0.28	0.25	0.22	0.20	0.30	0.28	0.25	0.22	0.19	0.18
70	0.28	0.26	0.24	0.21	0.28	0.26	0.24	0.21	0.19	0.28	0.26	0.24	0.21	0.18	0.17
80	0.26	0.24	0.22	0.20	0.26	0.24	0.22	0.20	0.18	0.26	0.24	0.22	0.20	0.17	0.16
90	0.24	0.23	0.21	0.19	0.24	0.23	0.21	0.19	0.17	0.24	0.23	0.21	0.19	0.17	0.16
100	0.23	0.22	0.20	0.18	0.23	0.22	0.20	0.18	0.16	0.23	0.22	0.20	0.18	0.16	0.15

47 mm wide rafters 400 mm rafter spacing

Overlay thickness mm	U value of roof construction (W/m²K)														
	Rafter depth (mm)														
	100					125					150				
	Underlay thickness (mm)														
	50	60	75	100	50	60	75	100	125	50	60	75	100	125	150
50	0.34	0.32	0.29	0.26	0.34	0.32	0.29	0.25	0.22	0.34	0.32	0.29	0.25	0.22	0.20
60	0.31	0.29	0.27	0.24	0.31	0.29	0.27	0.23	0.21	0.31	0.29	0.27	0.23	0.20	0.19
70	0.29	0.27	0.25	0.23	0.29	0.27	0.25	0.22	0.20	0.29	0.27	0.25	0.22	0.19	0.18
80	0.27	0.25	0.23	0.21	0.27	0.25	0.23	0.21	0.19	0.27	0.25	0.23	0.21	0.18	0.17
90	0.25	0.24	0.22	0.20	0.25	0.24	0.22	0.19	0.18	0.25	0.24	0.22	0.19	0.18	0.16
100	0.24	0.22	0.21	0.19	0.24	0.22	0.21	0.18	0.17	0.24	0.22	0.21	0.18	0.17	0.16

47 mm wide rafters 600 mm rafter spacing

Overlay thickness mm	U value of roof construction (W/m²K)														
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	50	60	75	100	50	60	75	100	125	50	60	75	100	125	150
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60	0.31	0.28	0.26	0.23	0.31	0.28	0.26	0.22	0.20	0.31	0.28	0.26	0.22	0.20	0.18
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100	0.23	0.22	0.20	0.19	0.23	0.22	0.20	0.18	0.17	0.23	0.22	0.20	0.18	0.16	0.15

Notes to 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.

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