THERMAL ECONOMICS– MARKET LEADERS IN REFLECTIVE INSULATION MATERIALS

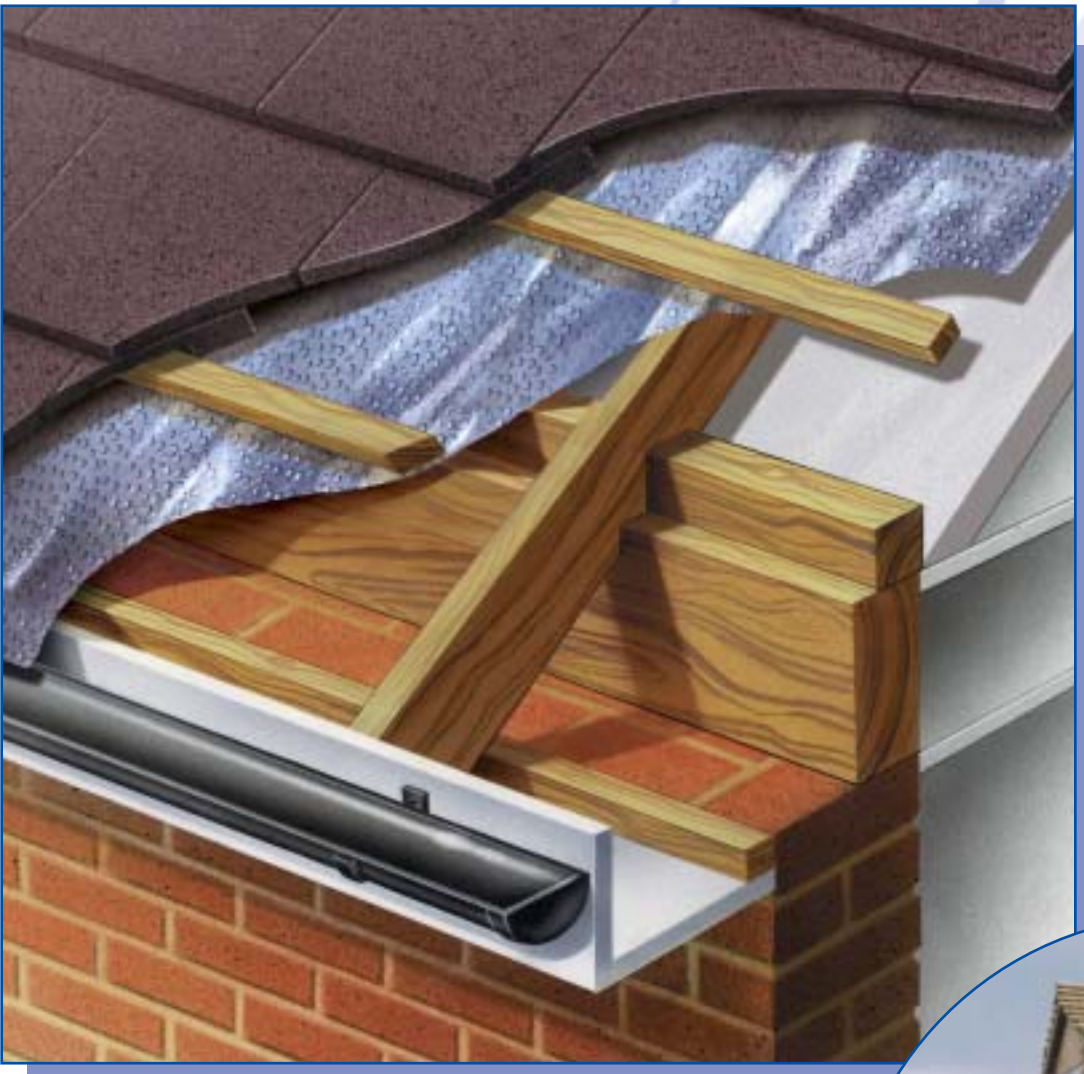
NON VENTILATED ROOF INSULATION 2002 REGULATIONS

ALREFLEX

2L2®

Super-R CLASS 'O'

THERMAL INSULATION & VAPOUR & RAIN BARRIER



- ☑ U-Values from 0.2 to 0.3 w/m²k with 100mm rafter
- ☑ Suitable for newbuild and refurbishment
- ☑ Total construction depth 125mm
- ☑ No ventilation void requirement
- ☑ Can be installed entirely from inside without removing existing tiles
- ☑ Economic - combined Insulation, Tile Underlay and Vapour Barrier

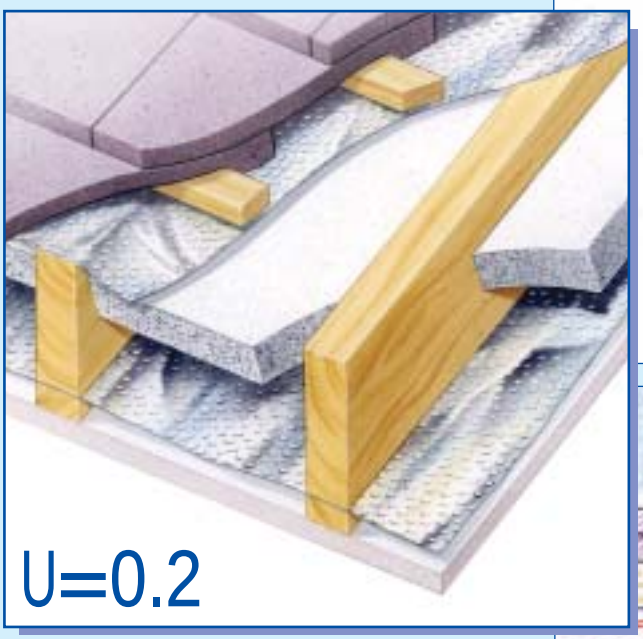
Thermal Economics™

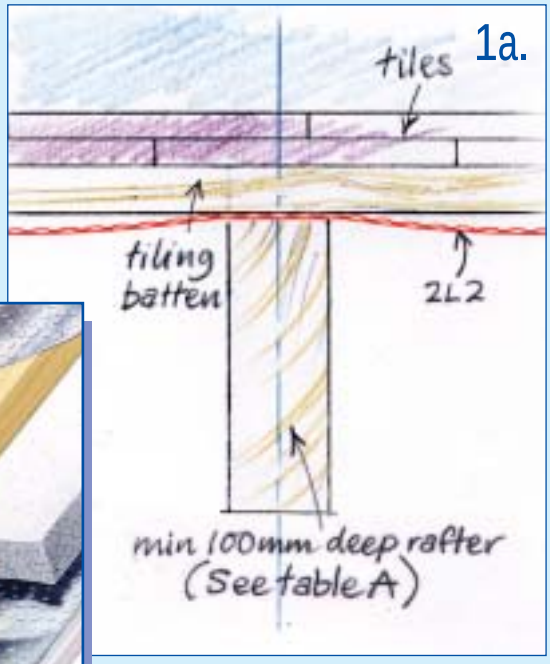
THERMAL & SOUND INSULATION TECHNOLOGY

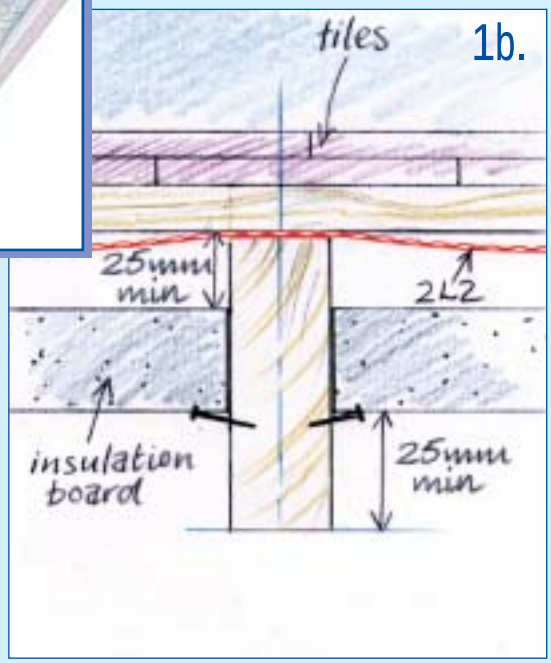
· NEW BUILD · LOFT CONVERSIONS · BARN CONVERSIONS · OFFICES · COMMERCIAL BUILDINGS ·

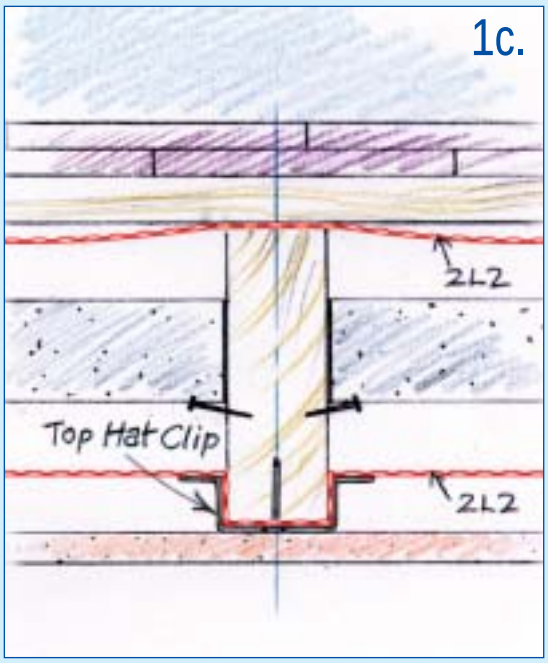
1 New Roof

Tile underlay fitted from outside, insulation fitted from inside.









1a.

Fit top layer of 2L2 as normal tile underlay. (150mm lapped horizontal joints).

1b.

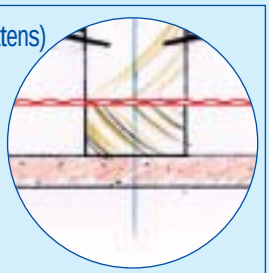
Fit insulation boards supported on nails.

1c.

Fit bottom layer of 2L2 (vapour barrier) with Top Hat Clip. Tape all joints with 75mm Alreflex tape.

1c.* (alternative using battens)

Fit bottom layer of 2L2 (vapour barrier) with 25 x 50mm batten. Tape all joints with 75mm Alreflex Tape.

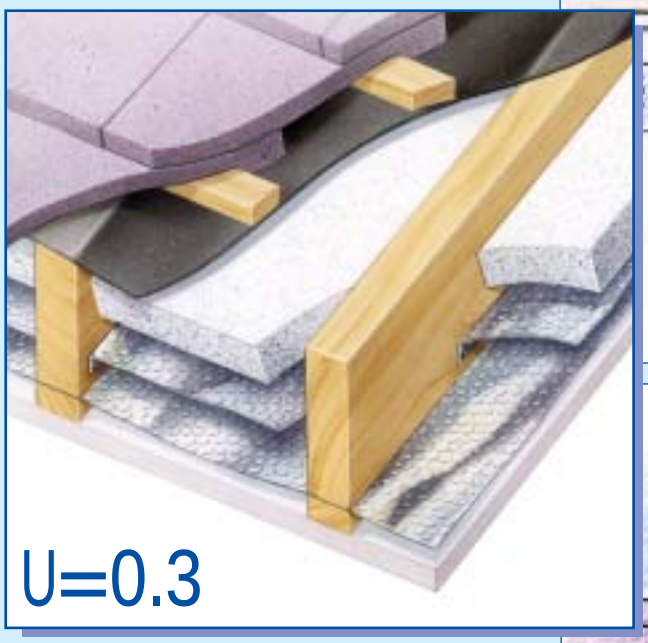


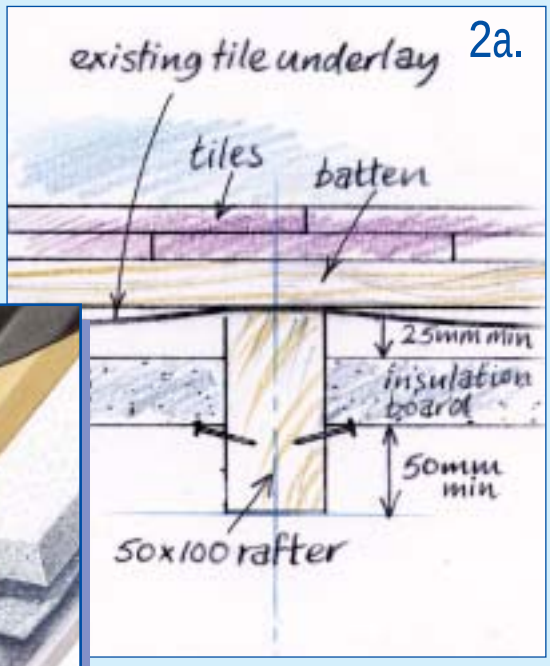
See Table A for Insulation Board thickness

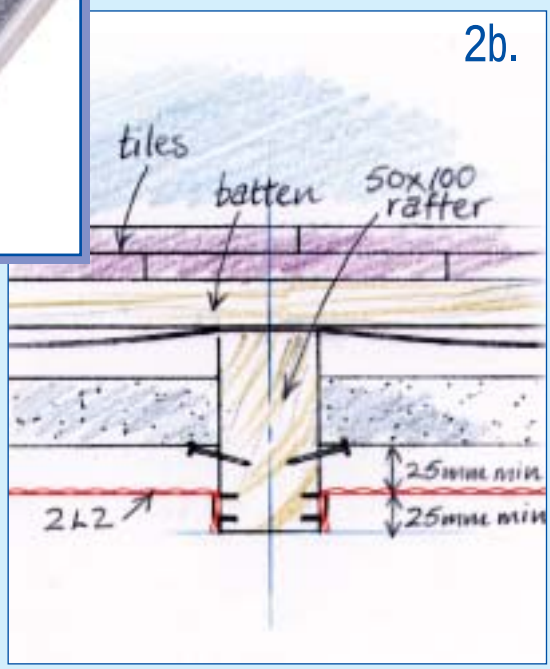
ALL U-VALUES CALCULATED USING BS EN ISO 6946 AS REQUIRED BY APPROVED DOCUMENT L (2002 REVISION)

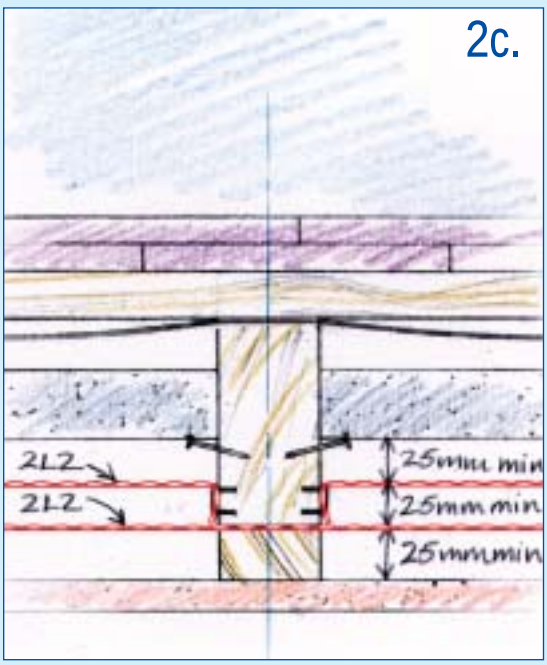
2 Loft Conversion

Existing tiled roof and tile underlay retained.









2a.

Fit insulation boards supported on nail heads.

2b.

Cut 2L2 into strips. Widths 40mm plus clear space between rafters. Staple to side of rafter forming a 20mm (approx) flange.

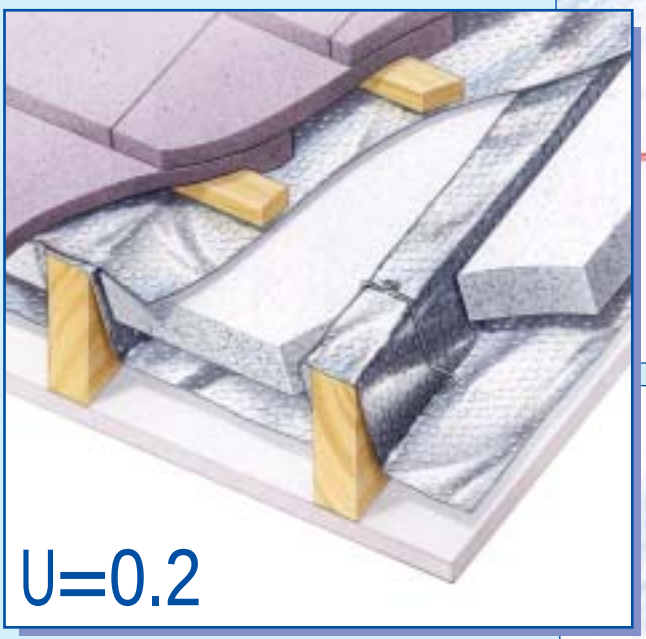
2c.

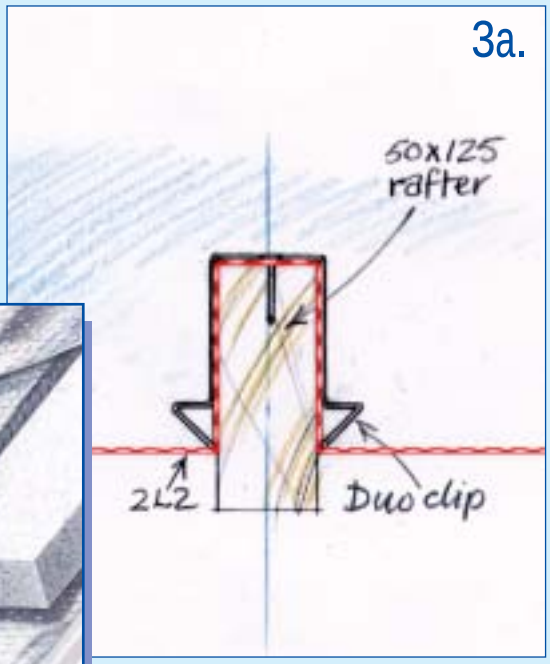
Fit bottom layer of 2L2 (vapour barrier) with 25 x 50mm batten. Tape all joints with 75mm Alreflex tape.

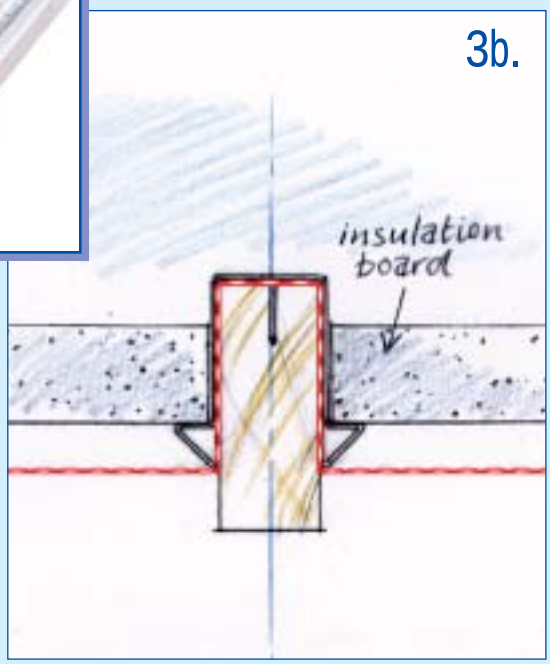
See Table A for Insulation Board thickness

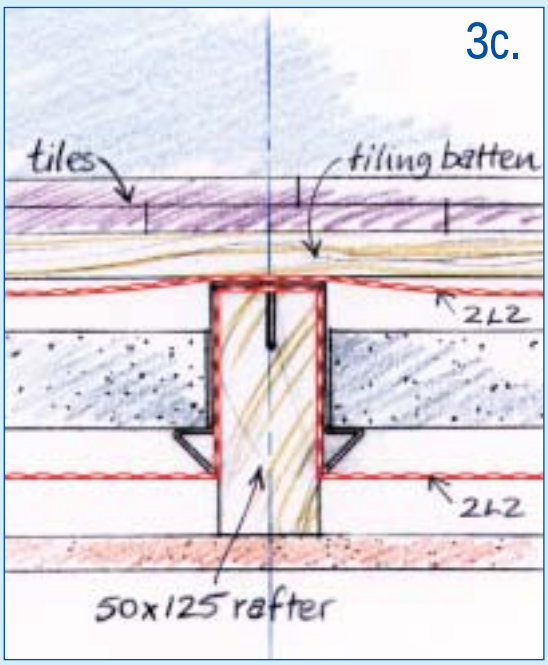
3 Newbuild

Installation from above.









3a.

Install bottom layer of 2L2 (vapour barrier) with spacer cups (@ 800mm c/c). Tape all joints with 75mm Alreflex tape.

3b.

Fit insulation boards supported on Duo-Clips.

3c.

Fit top layer of 2L2 as normal tile underlay (150mm lapped horizontal joints).

See Table A for Insulation Board thickness

NON VENTILATED ROOF INSULATION 2002 REGULATIONS

ALREFLEX 2L2® Super-R CLASS 'O' THERMAL INSULATION & VAPOUR & RAIN BARRIER

TABLE A

Table A (below) shows the thickness of various types of Rigid Insulation Boards which are required to be used in combination with the two layers of 2L2 to achieve the statutory U-values for each of the construction types.

TABLE A CONSTRUCTION TYPE	BOARD TYPE	THICKNESS OF INSULATION BOARD IN mm	
		Newbuild U= 0.2 w/m²k	Refurb U= 0.3 w/m²k
1	Expanded Polystyrene	100mm	20mm
	Polyurithane	60mm	12mm
2	Expanded Polystyrene	———	———
	Polyurithane	75mm	20mm
3	Expanded Polystyrene	100mm	20mm
	Polyurithane	60mm	12mm

The board sizes in Table A have been calculated for a 600mm rafter spacing and are based on k-values of:

Expanded Polystyrene- 0.04 W/mK

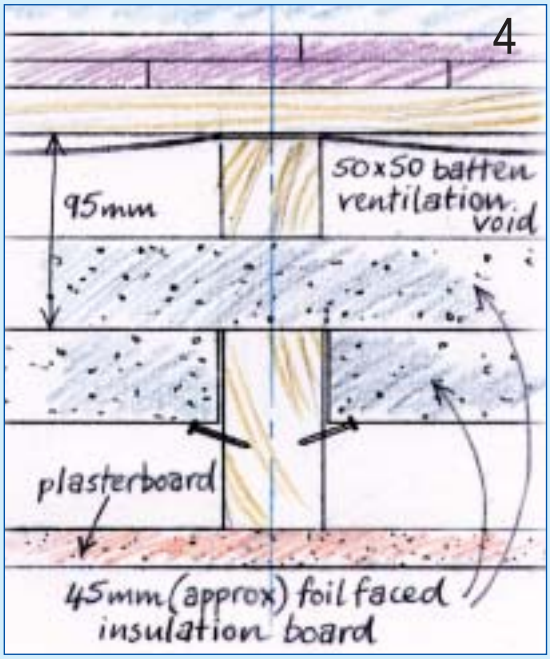
Polyurithane- 0.022 W/mK

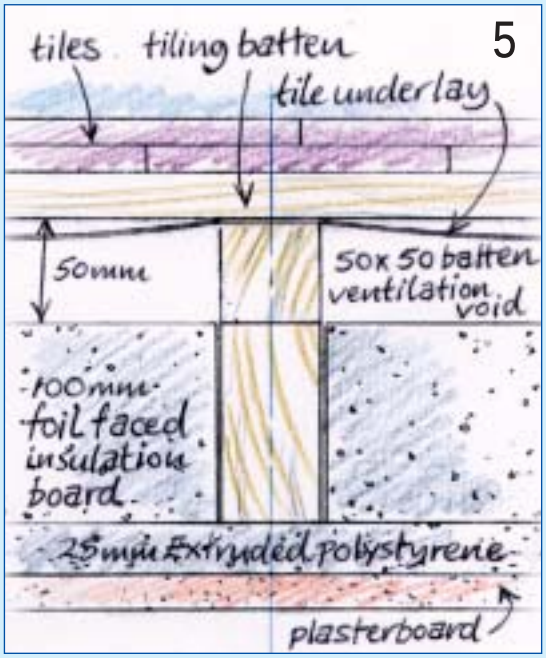
For variations on these please refer to the Thermal Economics Technical Department.

The advantages of Alreflex 2L2 over Rigid PUR Board alternatives:

Reduced depth of construction (125mm) • No 50mm ventilation void • Can be installed entirely from inside retaining the existing roof covering (loft conversions) • Draughtproof- especially with regard to old, irregular roof construction • Saving on material and labour costs

Alternative PUR Board solutions for comparison

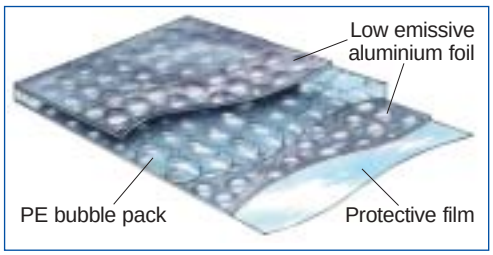




ALL U-VALUES CALCULATED USING BS EN ISO 6946 AS REQUIRED BY APPROVED DOCUMENT L (2002 REVISION)

THE PRODUCT

Alreflex 2L2 Super-R is composed of a sandwich construction of bubble film and an exceptionally low emissive (highly reflective) aluminium foil. (*see right*). The product derives its high insulation value from the low emissivity of the aluminium. For this reason the external aluminium surfaces are protected from oxidation by a special coating which does not effect the emissivity value.



ALREFLEX 2L2® Super-R CLASS 'O'
THERMAL INSULATION & VAPOUR & RAIN BARRIER

THE 2L2 SYSTEM

The 2L2 Super-R system is a non ventilated system with the roof structure partly contained within the insulation envelope creating a warm roof situation which falls under the Approved Document F. alternative approach category. The system essentially consists of two layers of 2L2 Super-R in which:

a) the inner layer acts as a vapour barrier and to this end all the joints are taped

b) the outer layer acts as the tile underlay and is permeable by virtue of its open weather lapped joints.

c) The insulation board between the two layers of 2L2 acts as void separator *but* allows the permeation of air through the gaps.

THE BUILDING REGULATIONS

Summary of requirements: thermal insulation introduced in 2002 for insulation at rafter level, i.e. 'room in the roof' situations:

	Conversions	Newbuild
Domestic	0.30 w/m²k	0.20 w/m²k
Non-domestic	0.30 w/m²k	0.20 w/m²k

NB. Values based on standard efficiency heating systems

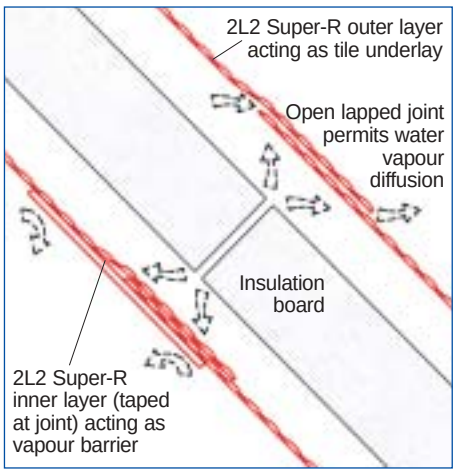
Ventilation requirements are defined in Approved Document F, under the categories of cold roofs, warm roofs and the alternative approach. The alternative approach is a free design method which has to comply with the requirements of BS 5250 "Control of Condensation in Buildings." All Alreflex 2L2 Super-R roof details are assessed to BS 5250, calculations on request.

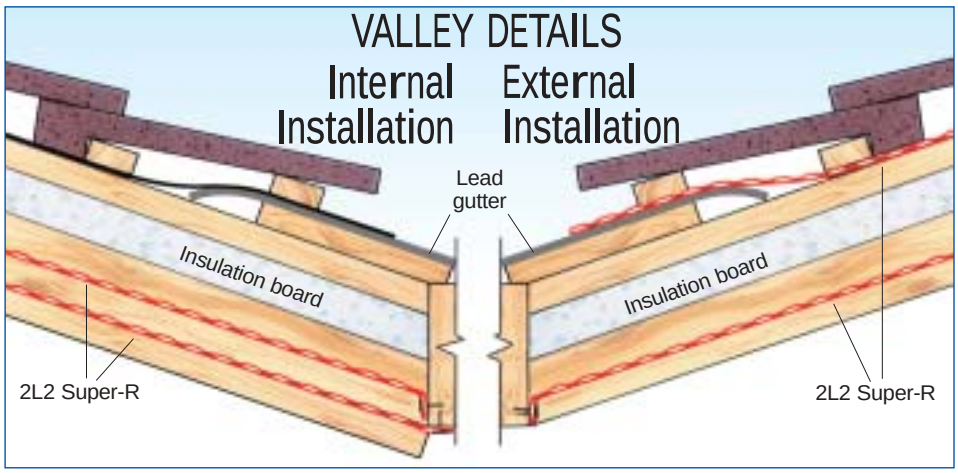
COMPLIANCE WITH BUILDING REGULATIONS: CONDENSATION

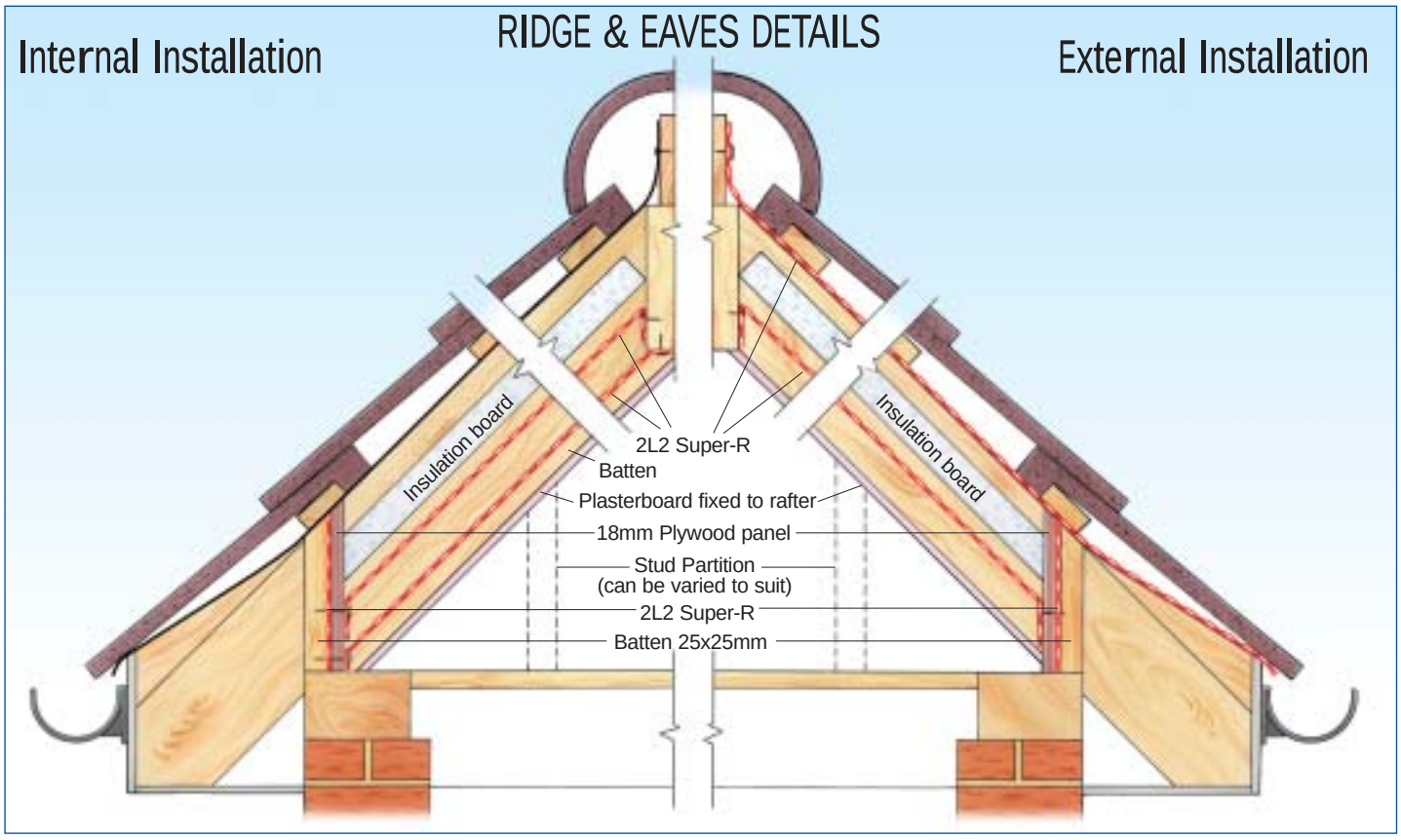
The Alreflex 2L2 Super-R Roof insulation system meets the Building Regulations requirements in respect of condensation control by compliance with the **Approved Document F "Alternative Approach"** for non ventilated roofs.

For each illustrated construction, control calculations have been made in accordance with BS 5250 Code of Practice for Control of Condensation in Buildings clauses 9.1 and 9.3.

See the graphs on back of leaflet.







MATERIALS AND WORKMANSHIP (REGULATION 7)

The product meets the requirement on the basis of:

a) Twenty years past experience in the usage in roofs in the UK

b) The relevant physical properties of the product with regard to;

- vapour resistance
- water resistance
- durability
- thermal resistance
- behaviour in fire

are assessed in BBA Certificates No. 90/2436 Alreflex 2L2 Dry Lining insulation and 93/2861 Alreflex 2L2 Cavity Insulation and Rain Water Barrier.

TESTING

Alreflex 2L2 Super-R 'Class O' has a fire performance rating of 'Class O' as defined in Approved Document B. Tested by BRE Centre for Fire Performance to BS 476: Part 6 and Part 7.

PRODUCT DATA

Packaging – 2L2 Super-R is supplied in 50m long rolls, width 1050mm, 1200mm and 1500mm.

Fire resistance – 2L2 Super-R is available with full Class O performance (see testing above) or with Class 1 spread of flame rating only. 2L2 Super-R should be protected from naked flame and sparks and stored apart from highly flammable materials.

Vapour resistance – With a vapour resistance in excess of 9000 MNs/g, 2L2 Super-R provides a highly effective vapour control layer.

CFC's – 2L2 Super-R is a CFC and HFC free product.

Strength and durability – 2L2 Super-R has a tensile strength comparable to BS 747 I/F roofing felt. The material is light (0.25 kg/m^2) but robust and not easily damaged in storage or during construction. 2L2 Super-R is rotproof, water and vapour resistant, durable and can be expected to remain an effective insulant for the normal life span of a building.

INSTALLATION PROCEDURE AND MODEL SPECIFICATIONS

For recommendations regarding specification and installation procedures please refer to our **Alreflex 2L2 Super-R Thermal Insulation Roofing Application Manual** obtainable from our Technical Department.

TECHNICAL SERVICES

Thermal Economics Technical Services Department will on request provide all necessary thermal and condensation calculations for Building Permit Submissions. On site pre and post specification advisory services can be provided.

QUALITY AND PRODUCT IDENTIFICATION

The thermal performance of the Alreflex 2L2 Super-R product is largely dependent on the low emissive quality and the protective polythene coating. **Beware of possible lower cost look alike products which may not have the same performance and can deteriorate very rapidly.**

The genuine Alreflex 2L2 Super-R product is clearly identifiable by it's own branded roll Sealing Tape.

The information contained within this brochure only applies to the genuine Alreflex 2L2 products.

REFERENCES

BBA Certificate No 90/2436, *Alreflex 2L2 dry lining insulation.*

BBA Certificate No 93/2861, *Alreflex 2L2 cavity wall insulation.*

BS 476: Part 6: 1987, *Method for assessing fire propagation index. Class O product only.*

BS 476: Part 7: 1987, *Method for classification of of the surface spread of flame of products.*

BS 874: Part 3: 1987/1990, *Tests for thermal transmittance and conductance.*

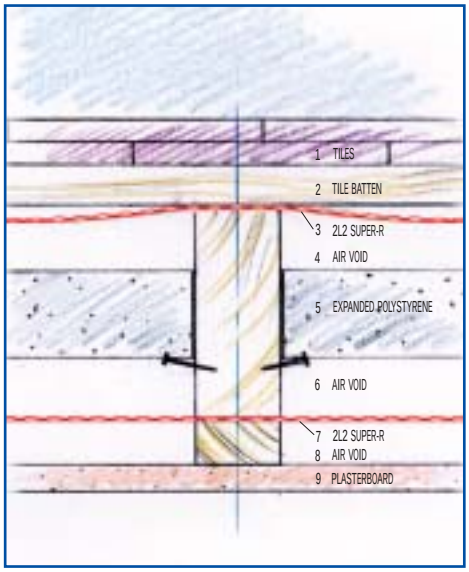
BS 5250: Part 7: 1989, *Code of practice for control of condensation in buildings.*

Building regulations Approved Document F, *Ventilation,* London, HMSO, 1990.

Building regulations Approved Document L, *Conservation of fuel and power,* London, HMSO, 1990.

CIBSE Guide A3, *Thermal properties of building structures, 1980*

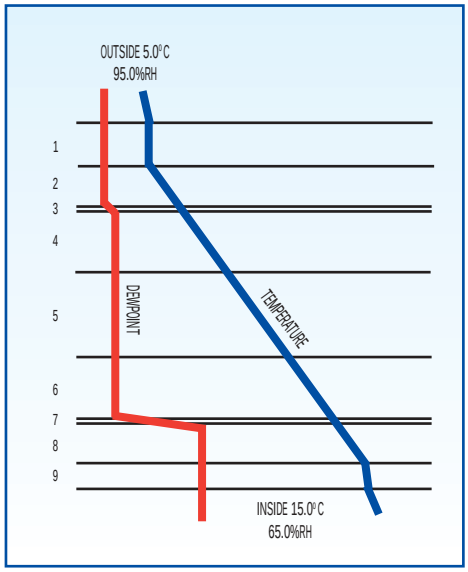
TYPICAL ROOF SECTION WITH A U-VALUE OF 0.20w/m^{2}k



Please note: The diagrams and illustrations contained in this brochure are not to scale.

They relate only to the fixing details and relative positioning of the Thermal Economics products, and are not in any way meant as advisory with regard to the structure of the building or general builders work details.

CONDENSATION CONTROL GRAPH FOR A TYPICAL ROOF SECTION WITH A U-VALUE OF 0.20w/m^{2}k



NB. Points of coincidence of the **temperature** line and the **dew point zone** indicate the possibility of **Interstitial Condensation**.

The diagram above relates to the typical roof section with U-value of 0.25W/m k, as shown below. It illustrates that the 2L2 Super-R system provides a very large safety margin against interstitial condensation.

ISO 9000 REGISTERED FIRM — UKAS QUALITY MANAGEMENT 018

NHER

MEMBER OF TRADA

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