

These solutions are specific to the TLX range and must not be used with other multi-foils

**10 FLAT ROOF**

The U-value target for a flat roof can vary. A new flat roof incorporated in a new extension or a loft conversion requires a U-value of 0.20 W/m<sup>2</sup>.K, whilst retained or replacement flat roofs require a U-value of 0.25 W/m<sup>2</sup>.K to be achieved under the 2006 regulations.

**10.1 Warm Deck**

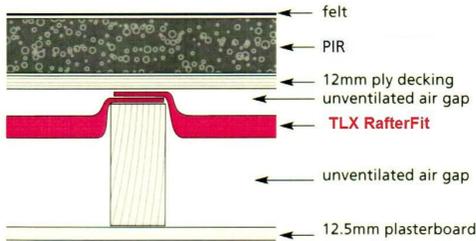
Warm deck flat roof systems typically consist of a single continuous thickness of rigid insulation across the top of the deck, with the weather proof covering laid on top of the insulation. The benefit to this system is that the timber deck is kept at a consistent temperature and so is less likely to prematurely fail. However, having the insulation above the line of the joists gives a thick roof structure.

**10.1.1 TLX RafterFit between joist, rigid board above joist**

TLX RafterFit can be installed between the joists before the firrings and flat roof deck are installed. In this application, TLX RafterFit can reduce the depth of rigid insulation needed above the flat roof deck and will also form a vapour control layer to reduce the risk of condensation.

TLX RafterFit is a vapour barrier, and this structure gives no risk of surface or interstitial condensation.

The most effective way to alter the U-value is to vary the thickness of rigid insulation on top of the rafters.



10.1.1 - TLX RafterFit between joists, PIR above joists						
Rafter centres (mm)	U = 0.20 W/m <sup>2</sup> .K		U = 0.18 W/m <sup>2</sup> .K		U = 0.16 W/m <sup>2</sup> .K	
	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)
400	70	100	80	100	90	100
600	70	100	80	100	90	100

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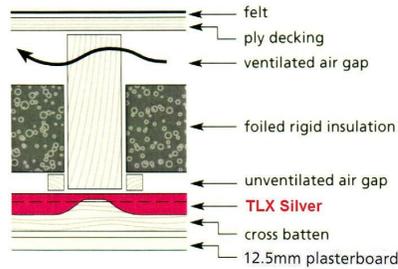
## 10.2 Cold Deck

The more traditional flat roof system is to install the insulation between and under the joists, with ventilation below the timber deck. TLX Silver can be used to reduce the thickness of additional insulation required between the joists to help ensure a ventilated gap is maintained between the insulation and the deck.

TLX Silver is a vapour barrier, and this structure gives no risk of surface or interstitial condensation.

### 10.2.1 TLX Silver below joist, rigid insulation between joist

The most effective way to alter the U-value is to vary the thickness of rigid insulation. However maintaining the air cavities is critical and reducing the depth of any cavities to below 20mm to allow for more rigid insulation is unlikely to improve the U-value.



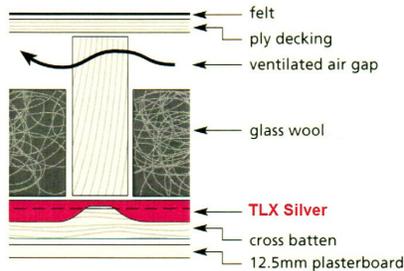
10.2.1.1 - TLX Silver below joists, Phenolic ( $\lambda$ 0.020) between joists						
Rafter centres (mm)	U = 0.25 W/m <sup>2</sup> .K		U = 0.20 W/m <sup>2</sup> .K		U = 0.16 W/m <sup>2</sup> .K	
	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)
400	55	130	80	155	120	195
600	50	125	70	150	100	180

10.2.1.2 - TLX Silver below joists, PIR ( $\lambda$ 0.022) between joists						
Rafter centres (mm)	U = 0.25 W/m <sup>2</sup> .K		U = 0.20 W/m <sup>2</sup> .K		U = 0.16 W/m <sup>2</sup> .K	
	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)
400	60	135	85	160	120	200
600	50	125	75	155	110	185

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### 10.2.2 TLX Silver below joist, mineral wool between joist

The most effective way to alter the U-value is to vary the thickness of mineral wool; however the thermal conductivity of the mineral wool product used is also important as this will vary depending on the density.



#### 10.2.2.1 - TLX Silver below joists, mineral fibre ( $\lambda$ 0.032) between joists

Rafter centres (mm)	U = 0.25 W/m <sup>2</sup> .K		U = 0.20 W/m <sup>2</sup> .K		U = 0.16 W/m <sup>2</sup> .K	
	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)
400	100	160	135	195	185	245
600	90	150	125	185	170	230

#### 10.2.2.2 - TLX Silver below joists, mineral fibre ( $\lambda$ 0.035) between joists

Rafter centres (mm)	U = 0.25 W/m <sup>2</sup> .K		U = 0.20 W/m <sup>2</sup> .K		U = 0.16 W/m <sup>2</sup> .K	
	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)	Insulation Thickness (mm)	Joist depth (mm)
400	105	165	145	205	195	255
600	100	160	135	195	180	240