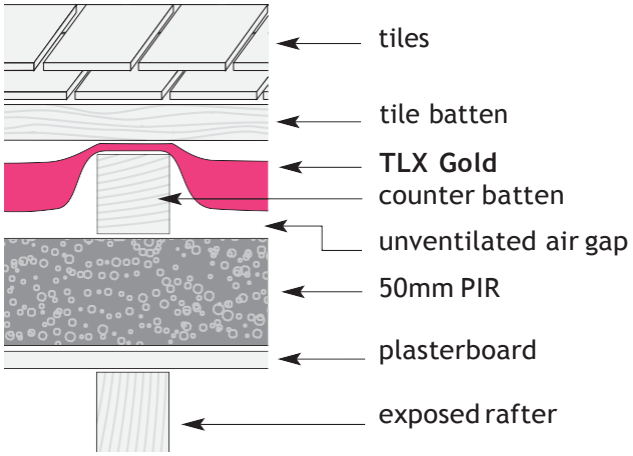
date
client
project
TLX ref

The TLX Gold solution: exposed rafters



- Remove tiles, tile battens
- Fit plasterboard above the rafters and 50mm PIR above the plasterboard.
- Fit 50mm deep counter battens over the PIR insulation.
- Drape TLX Gold over the counter battens leaving a 10mm unventilated air gap between the TLX Gold and PIR.
- Fit tile battens, then tiles or slates

Renovated roof U = **0.27 W/m² K**

Building Regulation compliance

Approved Document L1B states that:

- When a house is being re-roofed, or at least 50% is being repaired there is a requirement to improve the thermal performance. The required U-value for a pitched roof is 0.18 W/m² K. Where it is not reasonably practicable to achieve this, improvement to achieve a 15-year pay back period should be accepted.
- In the case of a roof that is a retained thermal element, it is only necessary to upgrade the thermal performance if it does not meet a threshold value of 0.35 W/m² K. If it is not feasible to upgrade to the required standard, a lesser performance should not be worse than 0.7 W/m² K.

Payback

Payback time for the insulation has been estimated as 3.3 years based on a simple 1970s room in a roof house, with an existing pitched roof containing no insulation, which is upgraded using TLX Gold as described.

Condensation Risk see page 3 for detail

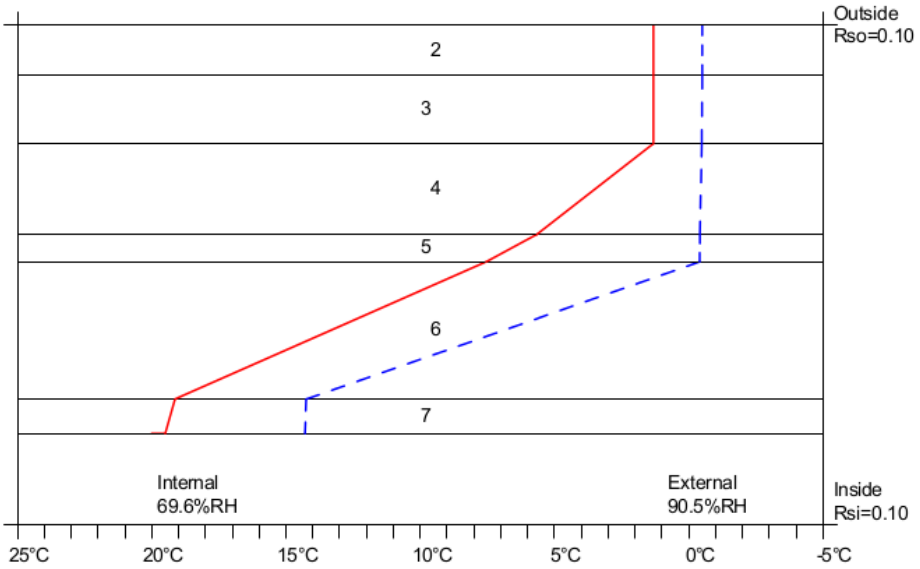
As shown, there is no risk of interstitial condensation with this detail and it complies with the standards set out on BS5250.

Guarantee

TLX Gold, when correctly installed, is guaranteed for 25 years and is backed by comprehensive product liability insurance.

Condensation risk analysis

		Interface Temp.	Dewpoint Temp.	Vapour Pressure (kPa)	Saturated V.P. (kPa)	Worst Cond. (g/m²)	Peak Buildup (g/m²)	Conden-sation
1	Outside surface resistance							
		1.3	-0.5	0.59	0.67			No
2	Tiles							
		1.3	-0.5	0.59	0.67			No
3	Ventilated air gap							
		1.3	-0.5	0.59	0.67			No
4	TLX Gold							
		5.6	-0.4	0.59	0.91			No
5	Unventilated air gap							
		7.5	-0.4	0.59	1.04			No
6	PIR above rafters							
		19.1	14.2	1.62	2.21			No
7	Plasterboard							
		19.5	14.3	1.63	2.26			No
8	Inside surface resistance							



Well sealed ceiling

The condensation risk analysis given above shows that the temperature through the roof structure remains above the dew point, and there is no risk of interstitial condensation.

The calculation is based on the provision of a well-sealed ceiling, which prevents movement of warm moist air into the roof structure. It is essential when fitting TLX Gold to the outside of a roof structure, that action is also taken to improve the airtightness of the ceiling. A well- sealed ceiling requires the following:

- There should be no gaps in the internal lining of the ceiling, such as holes, cracks or gaps where services such as pipes or wires penetrate into the ceiling. Any gaps must be permanently sealed.
- The top of any cavity in a wall must be sealed.
- Loft hatches must have a compressed seal or draught excluder strip
- Recessed light fittings or down-lighters must incorporate a sealed box
- Edges of roof-lights should be permanently sealed.

U-value calculation

TLX Gold Solution - exposed rafters

	d (mm)	λ layer	λ bridge	fraction	R layer	R bridge
Rse					0.100 #	
Tiles (clay)	15	1.000				
Air layer ventilated	25	R-value				
TLX Gold	33	R-value	0.130	0.030	0.850	0.254
Air layer unventilated	10	R-value	0.130	0.117	0.370	0.077
PIR above rafters	50	0.022			2.273	
Plasterboard	12.5	0.179			0.070	
Rsi					0.100	
total	**146 mm** (total roof thickness)				**3.763**	

this resistance substitutes for Rse and the resistance of layers 5-6 because of the ventilated air layer (layer 5)

Total resistance: Upper limit: 3.705 Lower limit: 3.593 Ratio: 1.031 Average: 3.649 m²K/W

U-value (uncorrected) 0.274

U-value corrections

No fixings in layer 2
Air gaps in layer 2 ΔU = 0.000 (Level 1)

Total ΔU	0.000
U-value (corrected)	0.274
U-value (rounded)	**0.27 W/m²K**

Contact

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