Xtralite
Daylight by Design

Thermal Efficiency

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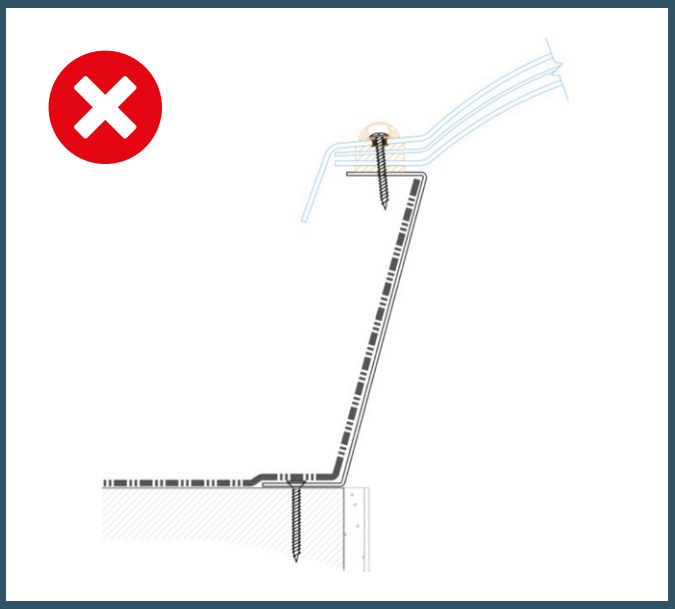
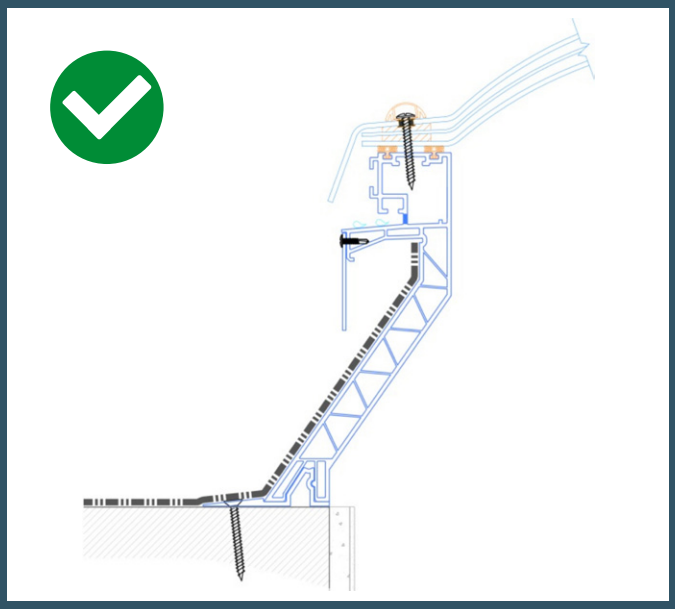
Thermal Efficiency

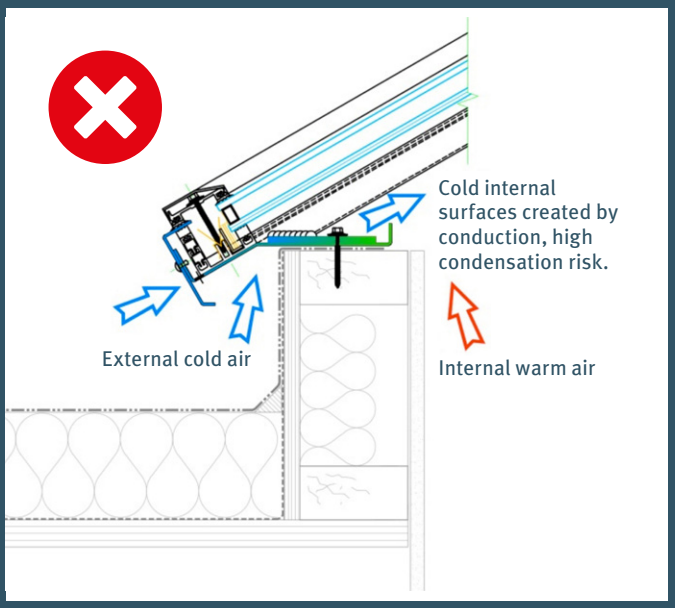
The Building Regulations within the United Kingdom require that the whole of a rooflight assembly (the frame / kerb, ventilation zones and glazing) must have a developed U value (Ud) which achieves, or is better than the minimum requirements set out by each member state, for each of the different construction classifications (new build / refurbishment etc. - see the table on the next page).



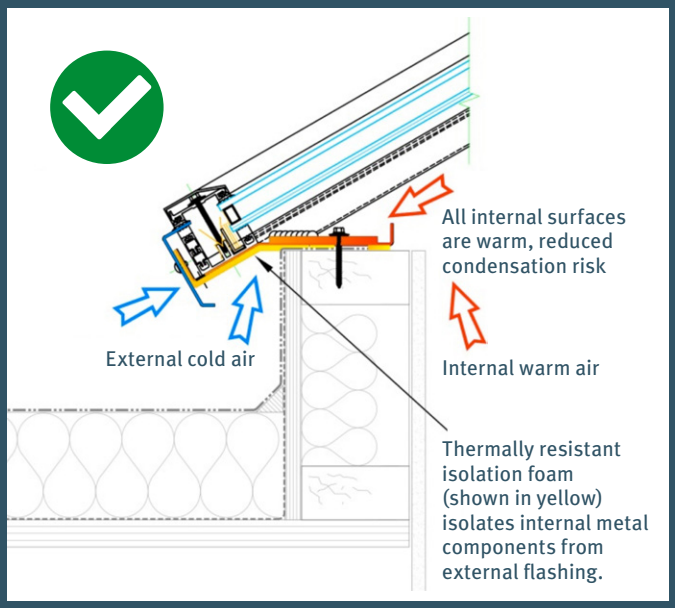
Throughout the UK, single skin metal kerbs are not compliant within heated spaces – even with a triple glazed top, as the whole rooflight needs to have a Ud value equal to or less than the Limiting Fabric Parameters. In all cases, thermal bridges should be avoided.



PVC insulated kerbs, and thermally broken metal kerbs ensure that the whole rooflight meets the requirements for thermal efficiency in each member state.



Generic detail illustrating a 'cold' assembly, vulnerable to excessive condensation.



Thermally enhanced kerb attachment.

Thermal Efficiency

Despite the complex array of building regulations that apply around the British Isles, those relating to energy saving and the reduction of carbon emissions are becoming more unified. Primarily this is due to the need to conform to the European Directive on the Energy Performance of Buildings – 2010/31/EU.

Member State (Document)		England (Part L)				Scotland (Section 6)					Wales (Part L)				Northern Ireland (Technical Booklets)			
		L1A (2013 with 2016 amends)	L1B (2010 with 2016 amends)	L2A (2013 with 2016 amends)	L2B (2010 with 2016 amends)	Domestic (2015)			Non-Domestic (2015)		L1A	L1B	L2A	L2B	Technical Booklet F1 (2012)		Technical Booklet F2 (2012)	
Construction Classification		New Build Dwelling	Existing Dwelling	New Build Non-Dwellings	Existing Non-Dwellings	New Build	Extensions - Column A	Extensions - Column B	New Builings	Extensions	New Build Dwelling	Existing Dwelling	New Build Non-Dwellings	Existing Non-Dwellings	New Build Dwellings	Existing Dwellings	New Build Non-Dwellings	Existing Non-Dwellings
Maximum Values	Area weighted average U-value (W/m²/°K) for all rooflights	2.0	1.6	2.2	1.8	1.6	1.4	1.6	2.0	1.6	1.6	1.6 (in areas of architectural or historic interest; centre pane 1.2)	2.2	1.8 (in areas of architectural or historic interest; centre pane 1.2)	2.0	1.6	2.2	1.8
	Individual element U-value (W/m²/°K)	-	-	-	-	3.3	3.3	3.3	3.3	3.3	-	-	-	-	3.3	-	3.3	-
	Air Permeability (m³/hr/m² @ 50 Pa)	10	-	10	-	10	10	10	10	10 (Shell buildings; 7)	10	-	10	-	10	-	10	-
Notional Building	Target U values for the "notional" building - W/m²/°K	1.4	-	1.8	-	1.4	-	-	1.8	1.8	-	-	-	-	-	-	-	-
	Air Permeability (m³/hr/m² @ 50 Pa)	5	-	3 / 5 / 7 depending on gross volume of building	-	7	-	-	5	5	-	-	-	-	-	-	-	-

It is important to remember that the maximum area weighted average U-value applies to the average insulation value of the entire rooflight; including any glazing bars, kerbs or other potential thermal bridges. Actual U values for rooflights should be established in accordance with BRE publication BR 443 'Conventions for U-value calculations', which can be particularly difficult unless independent, accredited testing has been carried out.

The U-values for out-of-plane rooflights should be based on the developed area of the rooflight, rather than the aperture area.

Details of how the developed area is defined and calculated are given in Assessment of thermal performance of out-of-plane rooflights – NARM Technical Document NTD 2 (2010).

Calculation of the proposed project's Building Emission Rate (BER) must be carried out by the use of a Simplified Building Energy Model (SBEM) or other such approved software tool. Once the designer is satisfied that all the input data accurately reflects the proposed buildings design, it must be shown that the BER is equal to, or less than the Target CO_2 Emission Rate (TER) for a similar 'notional' building, in order for compliance to be achieved.

It is important to note that SBEM software recognises the need for greater use of electric lighting if rooflight areas are reduced; this increase in energy demand and carbon emissions can make it more difficult for a building to comply, with reduced natural light and rooflights. So, use of an appropriate quantity of rooflights with properly verified low U-values, combined with good artificial lighting control is an important step towards meeting the required TER.

If you have a specific query relating to U-values for rooflights, contact us on **01670 354 157** or email **sales@xtralite.co.uk**.