

# White paper

**Building Regulation Approved  
Document L:**

**Conservation of fuel and power,  
2013 edition**

**Changes regarding Roof Windows  
and Glazed Rooflights**



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Rooflights & more...

# Building Regulation Approved Document L: Conservation of fuel and power, 2013 edition Changes regarding Roof Windows and Glazed Rooflights

(These notes do not include Scotland although will apply to some accepted energy buildings in Wales).

These amendments came into force on 6 April 2014. The main change that will affect the installation and operation of Rooflights and related products in these Approved Documents is that an increased fabric energy efficiency target for a notional building has been specified as a **6% CO<sub>2</sub> saving for dwelling and 9% for other buildings when measured against 2010 levels.**

## 1. Building Regulation Approved Document L1A: Conservation of fuel and power in new dwellings

L1A is for use in construction of new dwellings.

The main aim of the changes for the 2013 edition is to deliver 6% CO<sub>2</sub> savings across the domestic building mix.

Figures have been given to create a notional dwelling which, if constructed entirely to these specifications, will meet the desired carbon dioxide and fabric energy efficiency targets. Designers can vary the specification, providing the same overall level of CO<sub>2</sub> emission and fabric energy efficiency performance is achieved or bettered.

### 1.1 Model Design

The Target Emission Rate (TER) and Target Fabric Energy Efficiency (TFEE) rates are based on a dwelling of the same size and shape as the actual dwelling constructed to a concurrent specification. If the dwelling is constructed entirely to this specification it will meet the TER and better the TFEE rates and therefore pass. Concurrent notional building specifications are not prescriptive and some builders may prefer to adopt model design packages rather than to engage in design for themselves. Designers are free to explore the most economic specification to meeting the TER and TFEE rate in each case.

#### 1.1.1 Table 4

Concurrent Specification for Windows, Roof Windows, Glazed Rooflights and Glazed Doors is **1.4Wm<sup>2</sup>K**. This is the whole window U-Value.

Orientation of the windows should be considered: large windows facing south will benefit from passive solar gains. Designers should be aware of the risk of overheating through excessive solar gain in the summer, and include shading to avoid excessive summer heat gain. High g-Values

that increase solar gain reduce the space heat load.

### 1.2 Limits on Design Flexibility

Table 2 sets out the limiting standards for the properties of the fabric elements of the building. Each stated value represents the area weighted average for all the elements of that type. In general, to achieve the TER and the TFEE rate, a significantly better fabric performance than that set out in Table 2 is likely to be required. U-Values should be calculated using methods and conventions as set out in BR443 *Conventions for U-Value Calculation* and should be based on the whole element or unit. For example in the case of a window, the combined performance of the glazing and the frame. The U-Values should be assessed with the Roof Window or Rooflight in the vertical position.

#### 1.2.1 Table 2 Limiting Fabric Parameters

Windows, Rooflights, Glazed Rooflights, Curtain Walling and Pedestrian Doors to **2.0W/m<sup>2</sup>K**.

For the purpose of checking compliance with the limiting fabric values for Rooflights the true U-Value based on the average area can be converted to the U-Value based on the developed area of the Rooflight.

### 1.3 Evidence of Compliance

During the Report of Compliance, items whose specification is better than a typically expected value should be highlighted. For Rooflights and Doors this value is **1.2W/m<sup>2</sup>K**.

Finally, within the document are the original requirements for air permeability. Air permeability is defined as the air leakage per hour per square metre of envelope area at the test reference pressure differential of 50 pascals (50N/m<sup>2</sup>). The envelope area is the total area of all floors, walls and ceilings bordering the internal volume that is subject to the pressure test. This includes walls and floors below external ground level. Overall internal dimensions are used to calculate this envelope area.

The limiting air permeability is the worst allowable air permeability. The design air permeability is the target value set at the design stage and must always be no worse than the limiting value.

The dwelling is shown to comply with the requirements if the measured air permeability is not worse than the limit value of  $10 \text{ m}^3/(\text{h}\cdot\text{m}^2)$  at 50 pascals.

## 2. Building Regulation Amended Approved Document L1B: Conservation of fuel and power in existing dwellings

The main changes in this section are:

- Reference to third party guidance of window energy rating (WER)
- Reference to third party guidance on establishing U-Values based on developed areas of the Rooflights

The standards for control fittings including Windows, Roof Windows and Rooflights should be in the WER Band C or better, or a **U-Value of  $1.6\text{W}/\text{m}^2\text{K}$** . The U-Value is based on the converted developed area of the Rooflight.

Also added is the Glass and Glazing Federation (GGF) Guidance to the calculations of Energy Ratings for Windows, Roof Windows and Doors ([www.ggf.org.uk](http://www.ggf.org.uk)).

NARM Technical Document MTD 2 (2010) ([www.narm.org.uk](http://www.narm.org.uk)) has been added too.

## 3. Building Regulation Approved Document L2A: Conservation of fuel and power in new buildings other than dwellings

L2A is for use in new buildings other than dwellings, which also covers the construction of extensions to existing buildings where the total useful floor area of the extension is greater than  $100\text{m}^2$ , and greater than 25% of the total useful floor area of the existing building.

The main aim of the changes for the 2013 edition is to deliver **9% CO<sub>2</sub> savings** across the non-domestic building mix.

If the actual building is constructed entirely to the notional building specification it meets the CO<sub>2</sub> targets.

Table 5 provides a summary of the concurrent notional building specification for each category of building. As before, designers are free to explore the most economic specification to meet the TER in each case and some builders may prefer to adopt model design packages rather than

engage in design for themselves. Further information is available on [www.modeldesigns.info](http://www.modeldesigns.info).

### 3.1 Table 5 – Summary of concurrent notional building specification

- Rooflight U-Value  **$1.8\text{W}/\text{m}^2\text{K}$**
- g-Value 55%
- Light transmission at 60%

### 3.2 Limiting the effects of heat gain in the summer

The document gives two examples for a top lit space. One example is: the average zone height is not greater than 6 metres, a horizontal roof of the same total area that is 10% glazed viewed from inside, having Rooflights with framing factor of 25% and normal solar energy transmission of 0.68. The next example is: if an average height is greater than 6 metres, a horizontal roof with the total area of 20% glazed as viewed from inside, Rooflights with a framing factor of 15% and a normal solar energy transmission g-Value of 0.46. In addition, there are limiting U-Values which again in the case of roof windows are the combined performance of the glazing and the frame and have been assessed in the vertical plane.

### 3.3 Table 3 - Limiting the fabric parameters

Windows, Roof Windows, Rooflights, Curtain Walling and Pedestrian Doors is  **$2.2\text{W}/\text{m}^2\text{K}$** .

Again, the true U-Value based on aperture size can be converted to the U-Value based on the developed area of Rooflights.

As before, when reporting, if the Window or Door U-Value is better than  **$1.5\text{W}/\text{m}^2\text{K}$**  this should be highlighted.

## 4. Building Regulation Approved Document L2B: Conservation of fuel & power in existing buildings other than dwellings

The main changes here are all other Windows, Roof Windows and Rooflights  **$1.8\text{W}/\text{m}^2\text{K}$  for the whole unit**, based on aperture area converted to the developed roof area of the Rooflight.

Again the true U-Value based on aperture size can be converted to the U-Value based on the developed area of Rooflights.

## 5. Conclusion

In conclusion Documents L1A and L2A have the most significant changes both in terms of amendments and the required uplift in energy efficiency. Documents L1B and L2B do not have such significant changes with minor amendments but include upstands as part of a complete Rooflight unit.

Whitesales, the UK's leading supplier of Rooflights, have a range of durable energy efficient products that meet these new regulations.

When fitted in combination, Whitesales' domes, curbs and upstands will give a finished dwelling the desired levels of energy efficiency set out in the document above. In addition, they will remain fully compliant, provide an aesthetically pleasing finish and last the test of time.

- Whitesales leads the industry in energy efficient products made from durable environmentally friendly materials for sustainable dwellings
- Whitesales' products do not require further development to meet the new regulations outlined above
- Whitesales' Rooflights are ADL compliant by providing sustainable lighting, solar heating, passive ventilation and cooling

For more information, and advice on your next project, please speak to Whitesales' dedicated team on **01483 271371**.