

# What should U value?



A BWF Timber Window Accreditation Scheme Fact Card on

## What is Part L?

Part L is the shorthand term for the section of the Building Regulations England & Wales governing the energy efficiency of buildings, and forms part of the Government's overall strategy to reduce energy usage and CO<sub>2</sub> emissions. It covers both the Regulations themselves, which have the force of law, and the accompanying Approved Documents, which give guidance on how to meet the Regulations' requirements in practice. The latest edition of Approved Document L became effective on 6th April 2006. Split between Part L1 (domestic) and Part L2 (non-domestic), these sections are each further subdivided into A) new build and B) replacement and extensions.

As far as windows are concerned, the main objective is to reduce the amount of heat loss from the building through the window. Poorly insulated window frames and single glazed windows account for up to 20 per cent of heat loss in the average home.

## How can you comply?

If you follow the guidance in the Approved Documents to the Building Regulations, you will then be deemed to satisfy the Building Regulations. If you do not, then you may have to prove how you comply with the Building Regulations. This can be a time consuming and expensive task.

Compliance with Part L is ultimately the responsibility of the building owner. However, if the owner is not a building professional, then they are likely to rely on the window manufacturer or installer to ensure compliance.

## How is heat loss measured?

It is determined from the U-value (thermal transmittance), which is a measure of the rate at which heat is lost through a product or component (see table overleaf). A lower U-value indicates a more energy efficient product. U-value is measured in W/m<sup>2</sup>K (watts per square metre, per degree Kelvin). Although each component of the building (i.e. roof, wall, windows) needs to achieve a minimum U-value as stated in the appropriate Building Regulations, by carefully choosing to have certain components achieving better U-values you can improve the energy performance of the whole building.

## PART L

Including:

- What is Part L?
- How can you comply?
- How is heat loss measured?
- What are the requirements?
- How are U-values produced?

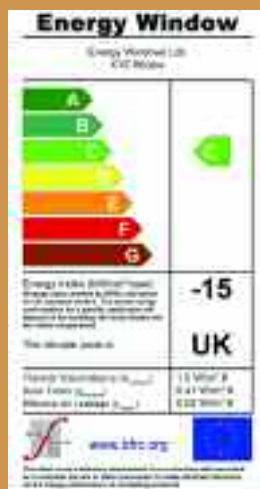
# What are the requirements?



# How are U-values produced?



This house has no wall insulation and is single glazed whilst the others are all cavity filled and are double glazed. Whites, reds and yellows indicate higher heat loss. Picture courtesy of IRT Surveys.



Contact TWA Scheme Manufacturers for fully factory finished timber windows

[www.bwf.org.uk/windows](http://www.bwf.org.uk/windows)

## New Build

- To determine the U-value required for windows and doors, the Whole Building CO<sub>2</sub> Target Emission Rate (TER) must be determined using notional values. The Dwelling Emission Rate (DER) is then determined using actual values and must not exceed the TER. Only with these figures can the U-value for windows and doors be reached. The Building Regulations limit the maximum acceptable whole U-value to 2.2 W/m<sup>2</sup>K.

## Replacement Windows & Doors

- Replacement windows should be limited to a maximum whole window U-value of 2.0 W/m<sup>2</sup>K or use glass with a centre pane U-value of 1.2 W/m<sup>2</sup>K or better. Alternatively, it may have a Window Energy Rating (WER) performance of E or better. (See point 2 below).
- Replacement doors will only need to meet the recommendation where they have more than 50% glass area (measured overall of frame) which must then be proved by hot-box testing, calculation or by using glass with a centre pane U-value of 1.2 W/m<sup>2</sup>K.
- When replacement windows and doors are used consideration should also be given to compliance with other parts of the Building Regulations notably parts B, E, F, J and particularly part N. [[www.planningportal.gov.uk/approveddocuments](http://www.planningportal.gov.uk/approveddocuments)]

## Extensions

- Windows in extensions must achieve a whole window U-value of 1.8 W/m<sup>2</sup>K or better or use glass with a centre pane U-value of 1.2 W/m<sup>2</sup>K or less. Alternatively for the first time, windows must have a WER performance of D or better. (See point 2 below).

## Notes

- Some buildings, such as those in conservation areas, may have certain exemptions from some (or all) regulations in Part L. Contact your Building Control Officer for details.
- In Scotland (Section 6: Energy), all windows are expected to achieve a U-value of 1.8 W/m<sup>2</sup>K or better. For more information refer to [www.sbsa.gov.uk](http://www.sbsa.gov.uk).
- In Northern Ireland (DOE Technical Booklet F1 and F2 2006 – Conservation of Fuel and Power from 30 November 2006) U-values are equivalent to those for England & Wales. For more information refer to [www.dfpni.gov.uk/br-technical-booklets](http://www.dfpni.gov.uk/br-technical-booklets).

There are 3 methods:

- By referring to the indicative U-values given in the extract from table 6e of SAP 2005 shown below.

Double Glazing With Wood or PVC-U Frame	Gap between panes		
	6 mm / W/m <sup>2</sup> K	12 mm / W/m <sup>2</sup> K	16 mm / W/m <sup>2</sup> K
Air filled only	3.1	2.8	2.7
Low-E, $\epsilon\eta = 0.15$	2.7	2.2	2.0
Low-E, $\epsilon\eta = 0.1$	2.6	2.1	1.9
Low-E, $\epsilon\eta = 0.05$	2.6	2.0	1.8
Argon filled only	2.9	2.7	2.6
Low-E, $\epsilon\eta = 0.2 +$ Argon filled	2.5	2.1	2.0
Low-E, $\epsilon\eta = 0.15 +$ Argon filled	2.4	2.0	1.9
Low-E, $\epsilon\eta = 0.1 +$ Argon filled	2.3	1.9	1.8
Low-E, $\epsilon\eta = 0.05 +$ Argon filled	2.3	1.8	1.7

The Standard Assessment Procedure (SAP) is adopted by Government as the UK methodology for calculating the energy performance of dwellings. Visit [www.bre.co.uk/SAP2005](http://www.bre.co.uk/SAP2005) for more information.

- By using ISO standard methods of calculation (BS EN ISO 10077-1 & 2). Using computer software programs such as THERM is a simple way of doing this.

The British Fenestration Rating Council (BFRC) can provide suitable software or Certified Simulators to determine the U-value of the product. These results can be used to obtain a WER which can be third party certificated through a BFRC appointed Independent Agency. An energy rating labelling scheme is also available from the BFRC. [[www.bfrc.org](http://www.bfrc.org)]

- By using the U-values obtained from hot box testing in a UKAS approved laboratory. Window manufacturers need only provide one U-value for each style of window / glazing unit on a standard size and configuration, using either calculation or hot box methods. This U-value will cover all sizes for their products.

This Fact Card is produced by the BWF's TWA (Timber Window Accreditation) Scheme whose manufacturing members are independently certificated by BSI to Kitemark status. Backed by lengthy warranties, Scheme members offer high performance products made from 100% certified timber, to give you peace of mind. Using windows and entrance doorsets that are independently certified and tested is the simplest way to ensure that they meet all the relevant Building Regulations and British and European Standards.



**British Woodworking Federation**  
 55 Tufton Street, London SW1P 3QL  
 Tel: 0870 458 6939 Fax: 0870 458 6949  
 e-mail: [windows@bwf.org.uk](mailto:windows@bwf.org.uk)  
[www.bwf.org.uk/windows](http://www.bwf.org.uk/windows)

