

The Approved Documents which provide guidance in complying with the requirements of the Building Regulations for England and Wales for the conservation of fuel and power were published on the 30th April 2010. The following is a summary of the contents applicable to building work on existing dwellings and building work to construct new dwellings.

Approved Document L1B 2010

Conservation of fuel and power in existing dwellings

Comes into effect on the 1st of October 2010.

Work on Controlled Fittings (replacing windows and doors)

The guidance given in AD L1B refers only to a window, roof window rooflight or door that is a whole unit. i.e. including the frame. Replacing the glazing while retaining an existing frame or hanging a new door in an existing frame does not have to meet the Part L standards although, where practical, it would be sensible to do so.

Where windows, roof windows, rooflights or doors are to be provided these should be draught proofed units whose performance in no worse than given in Table (1).

Table (1)

Fitting	Standard
Window, roof window or rooflight	WER band C or better ⁽¹⁾ U-value = 1.6 W/m ² K
Doors ⁽²⁾	U-value = 1.8 W/m ² K

(1) Building Control Bodies may accept a WER declaration from a certification scheme that provides a quality-assured process and supporting audit trail from calculating the performance of the window through to installation as evidence of compliance.

(2) including doors with > 50% of internal face glazed

Guidance on energy saving windows will be available from the Energy Saving Trust [4] although the link (see below) follows the guidance in AD L1B 2006 and has not yet been updated.

Where replacement windows are unable to meet the above requirements because of the need to maintain the external appearance of the façade or the character of the building, replacement windows should meet a centre pane U-value of 1.2 W/m²K, or single glazing should be supplemented with low-e secondary glazing taking care to minimise the risk of condensation between the primary and secondary glazing.

U-values shall be based on the whole unit, i.e. the combined performance of the glazing and the frame, using the methods and conventions set out in BR 443 [1]
The U-value of the window can be calculated for:

- a) the smaller of the two standard windows defined in BS EN 14351-1 [2], or
- b) the standard window configuration set out in BR 443; or

- c) the specific size and configuration of the actual window

The values given in SAP2009 [3] Table 6e can be used in the absence of test data or calculated values

If a window is enlarged or a new window created, the area of windows, roof windows, rooflights and doors should not exceed 25% of the total floor area of the dwelling unless compensating measures are included elsewhere in the work.

The Extension of a Dwelling

Prescriptive approach:

The total area of windows, roof windows, rooflights and doors in an extension should not exceed the sum of:

- (a) 25% of the floor area of the extension; plus
- (b) The total area of any windows or doors, which as a result of the extension work no longer exist or are no longer exposed.

Flexible approach:

Area-weighted U-value approach

The area weighted U-value of all elements in the extension should be no greater than that of an extension of the same size and shape and that uses elements with the thermal performance and areas given in the prescriptive method above.

Whole dwelling calculation method

Use SAP2009 to show that the calculated carbon dioxide emission rate from the dwelling with its proposed extension is no greater than that for the dwelling plus a notional extension built with the thermal performance and areas given in the prescriptive method above.

Conservatories and porches

The following conservatories and porches are exempt from the energy efficiency requirements

Which are at ground level;

Where the floor area is less than 30 m²

Where the existing walls, doors and windows in the part of the dwelling which separates the conservatory are retained or, if removed, are replaced by walls, windows and doors which meet the energy efficiency requirements; and where the heating system of the dwelling is not extended into the conservatory or porch.

Where the conservatory or porch does not meet all the requirements above there are two requirements:

- (a) effective thermal separation from the rest of the dwelling:

the walls, doors and windows between the dwelling and the conservatory or porch should be insulated and draught proofed to at least the same extent as in the existing dwelling

There should be independent temperature and on/off controls to any heating system within the conservatory or porch

Glazed elements should meet the standards set out in table (1). However there are no limitations on the total areas of windows roof windows and doors.

(b) No thermal separation from the rest of the dwelling:

The conservatory or porch should be treated as a conventional extension.

Material Change of use or change in energy status

Examples of material change of use are where a building is used as a dwelling where previously it was not or where a building which contains at least one dwelling, contains a greater or lesser number of dwellings than it did previously.

Examples of a change in energy status are where a previously unheated building, or parts of a building, are to be heated in the future or a previously exempt building is no longer within the exempted categories.

Where an existing window, roof window rooflight or door separates a heated space from an unheated space or the external environment and has a U-value that is worse than $3.3 \text{ W/m}^2\text{K}$ it should be replaced with elements which comply with the requirements for work on controlled fittings.

Historic or Traditional Buildings

The following classes of buildings have an exemption from the energy efficiency requirements where compliance would unacceptably alter the character or appearance of the buildings.

- (a) listed buildings
- (b) buildings in conservation areas; and
- (c) scheduled ancient monuments.

There are three classes of buildings where special considerations in making reasonable provision for the conservation of fuel and power may apply;

- (a) buildings which are of architectural and historic interest and are referred to as a material consideration in a local authority's development plan or local development framework;
- (b) buildings which are of architectural and historic interest within national parks, areas of outstanding beauty, registered historic parks and gardens, registered battlefields, the cartilages of scheduled ancient monuments, and world heritage sites;

- (c) buildings of traditional construction with permeable fabric that both absorbs and readily allows the evaporation of moisture.

The guidance given by English Heritage should be taken into account in determining appropriate energy performance standards for building work in historic buildings.

Approved Document L1A

Conservation of fuel and power in new dwellings

The energy efficiency requirements of the Building Regulations apply to all new dwellings.

The U-values for windows, roof windows, rooflights and doors shall be calculated as for AD L1B, above, and they shall be no worse than $2.0 \text{ W/m}^2\text{K}$

Daylight

When seeking to limit solar gains, consideration should be given to the provision of adequate levels of daylight. BS 8206-2 [5] gives guidance on maintaining adequate levels of daylight. The Building Regulations do not specify minimum daylight requirements. However, reducing window area reduces solar gain but increases the use of electric lighting. As a general guide, if the area of glazing is much less than 20% of the total floor area some parts of the building may experience poor levels of daylight.

Target CO₂ Emission Rate (TER)

The target CO₂ emission rate is the minimum energy performance requirement for a new dwelling and is calculated using SAP 2009. The CO₂ emissions are determined for a notional dwelling of the same size and shape as the actual dwelling and which is constructed according to a set of values set out in Appendix R of SAP 2009 and modified for the type of fuel used to heat the dwelling.

Dwelling CO₂ Emission Rate (DER)

The dwelling CO₂ emission rate is the actual energy performance of a dwelling as calculated using SAP 2009 and uses the actual values for the thermal elements of the building. The information which can be entered for windows and doors is the thermal transmittance (U-value), the total solar energy transmission of the glazing (g_{\perp}), the light transmittance of the glazing (g_L) and the proportion of the window or glazed doorset that is glazed (frame factor). The DER will also take into consideration the effects of the air permeability of the dwelling. On small developments where the builder has opted to avoid testing the assessed air permeability is $15\text{m}^3/\text{hr}/\text{m}^2$ at 50Pa. If the dwelling is to be pressure tested to measure the air permeability trickle ventilators should be temporarily sealed rather than just closed.

Before building work starts the builder shall demonstrate to the Building Control Body (BCB) that the DER of the dwelling as designed is not greater than the TER.

After the building work has been completed the builder must notify the BCB of the DER “as built” and whether the building has been constructed in accordance with the list of specifications submitted to the BCB before work started. If it was not, a list of any changes must be given to the BCB. The BCB can accept a sign off by a suitably accredited energy assessor.

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- [1] Conventions for U-value calculations, BRE, 2006
[http://www.bre.co.uk/filelibrary/rpts/uvalue/BR_443_\(2006_Edition\).pdf](http://www.bre.co.uk/filelibrary/rpts/uvalue/BR_443_(2006_Edition).pdf)
- [2] BS EN 14351-1: 2006
Windows and doors. Product standard, performance characteristics. Windows and external pedestrian doorsets without resistance to fire and/or smoke leakage characteristics.
- [3] SAP 2009 version 9.90, BRE, 2010
The Government’s Standard Assessment Procedure for Energy Rating of Dwellings
http://www.bre.co.uk/filelibrary/SAP/2009/SAP-2009_9-90.pdf
- [4] Energy Saving Trust – Glazing and energy efficient windows

Warning – at the time of writing the information given by the EST does not follow the updated requirements.

<http://www.energysavingtrust.org.uk/Home-improvements-and-products/Home-insulation-glazing/Glazing#energyefficientwindows>
- [5] BS 8206-2:2008
Lighting for buildings. Code of practice for daylighting