

Bulletin 7



Revisions to Building Regulations Part L September 2005

In summary Part L in England and Wales is changing, and the new Approved Documents were published on 13 September.

They come into force on 6 April 2006. Although the new Part L contains some fundamental changes, the implications for windows are minimal.

In new buildings, designers and builders will achieve compliance by calculating the total carbon dioxide emissions of their building. There will be considerable freedom in the specification of individual components, so long as the overall emissions target is met. Current popular glazing specifications will therefore be able to continue.

In existing housing, the current U value of 2.0 for PVC-U and timber replacement windows will continue. Window Energy Ratings are introduced as an alternative method; a replacement window achieving band E will be acceptable. Extensions are required to reach a slightly higher standard, and a band D window is specified.

Therefore double glazing containing hard coat low E glass such as Pilkington **K Glass**TM will continue to satisfy requirements for the foreseeable future.

After a lengthy consultation period, the new Part L Approved Documents (ADs) were published by the Office of the Deputy Prime Minister (ODPM) on 13 September. They will come into effect on 6 April 2006. They are available on the ODPM website*. The ADs are still referred to as "Draft", but they are not issued for comment and it is only typographical errors that will be changed. Four ADs will replace the current two, the four covering separately new and existing dwellings, and new and existing other buildings. This Bulletin has been prepared to give you a summary of the requirements for glazing and windows in each of the ADs, and a comparison with those in the current ADs.

ADL1A – New Dwellings

The 2002 Part L gave designers three alternative routes to compliance; Elemental U values, Target U values (ie trade-off) or SAP Ratings. Under the new Part L, all these options disappear and are replaced by a "Target carbon dioxide Emissions Rating" (TER). As the term implies, this is a calculation of the carbon dioxide emissions resulting from the energy consumption of the whole house. The only way of demonstrating compliance with the energy requirements of Part L1A will be to calculate the emissions of the house, using standard government "SAP" software, and ensure the emissions level (of both the designed and constructed building) is no higher than the TER.

The government software utilises the solar transmittance (g value) of the glazing as well as its heat loss, and therefore fully takes into account the positive energy aspects of the window when calculating the carbon dioxide emissions.

The house designer will have complete flexibility on window design although, in order to avoid excessive trade-off and condensation risk, a maximum average window U value of 2.2 W/m²K will be imposed.

Implications for glazing Because the government software takes into account solar gains, low E glass with a high g value (ie hard coat) will generally result in a house having a similar carbon dioxide Emissions Rating to one with soft coat low E. The maximum window U value of 2.2 means that ordinary (ie non low E) double glazing will no longer be permissible in new housing.

ADL1B - Existing Dwellings

Replacement windows

There will be three alternative ways of demonstrating compliance. These are by achieving (1) a whole window U value of 2.0 W/m²K or (2) a glass centre pane U value of 1.2 or (3) a Window Energy Rating of band E. The Window Energy Rating option is a new route to compliance.

Extensions

There will be three alternative methods. Option 1 is to show that the area-weighted U value of all the external elements of the extension is no greater than if there were 25% glazing (expressed as a percentage of floor area) of U value 1.8, along with the prescribed opaque U values and areas. Option 2 is to undertake a SAP evaluation to establish that the base dwelling plus extension has no higher emissions than the house plus extension designed to the standard in option 1. Option 3 is simply to specify a window of band D Window Energy Rating and glazing area no greater than 25%.

* http://www.odpm.gov.uk/stellent/groups/odpm_buildreg/documents/page/odpm_breg_040269.hcsp

Conservatories

Conservatories greater than 30m² floor area will require a maximum window U value of 2.0 W/m²K, or a maximum centre-pane U value of 1.2, or a Window Energy Rating of band E. Conservatories no greater than 30m² are exempt from this requirement.

Implications for glazing For replacement windows it really is a case of no change, although the Window Energy Rating route does introduce another option. The prescribed U values and Window Energy Ratings will enable hard coat low E glass such as Pilkington **K Glass**TM to be used wherever preferred.

ADL2A - New Buildings other than Dwellings

As with the new Part L for dwellings, the only means of achieving compliance with the energy requirements will be on the basis of total carbon dioxide emissions of both the proposed and completed building. The emissions will be calculated using government approved software, called SBEM, and must meet a target value. There will be freedom on the specification of individual components - subject to some limits. In the case of windows, a maximum average U value of 2.2 W/m²K must be achieved. This can rise to 2.7 in exceptional cases where the building has "high internal heat gains" (which are undefined). Display windows and similar glazing will however be exempt from all upper limits on U value.

Implications for glazing The government software takes account of the heat loss, solar gain and daylight transmission of the glazing. The significance of each factor will vary according to the building type and whether it is air-conditioned or naturally ventilated. Given the wide variety of building types, it is not possible to come to overall conclusions about the impact of the new Part L on glazing; however the upper limit on U value of 2.2 means that non low E glazing will no longer be permissible.

ADL2B - Existing Buildings other than Dwellings

Replacement windows

There will be two alternative ways of demonstrating compliance. These are by either achieving a whole window U value of 2.2 W/m²K or a glass centre pane U value of 1.2. The whole window U value can rise to 2.7 in exceptional cases where the building has "high internal heat gains". For non-housing that is "essentially domestic in character" (eg student accommodation or care homes), a third option will be

to use Window Energy Ratings; a band E window will comply.

Extensions

The AD distinguishes between large and small extensions; a large extension (greater than 100m² floor area and 25% of the floor area of the existing building) must achieve the same requirements as if it was a new building. For small extensions there are three options. Option 1 is to show that the area-weighted U value of the external elements is no greater than if the windows had a U value of 1.8 and an area of 30% of the wall (in the case of residential buildings), 40% in the case of offices, shops and places of assembly, and 15% in the case of industrial buildings, along with the prescribed opaque U values and areas. Option 2 is to undertake an evaluation to establish that the base building plus extension has no higher CO₂ emissions than the building plus extension designed to the standard in option 1. Option 3, for extensions that are "essentially domestic in character," means compliance can be achieved simply by using a window which is energy rated to band D and within a prescribed maximum window area.

Consequential Improvements

This is a new concept, arising from the new EU Directive on the Energy Performance of Buildings. ADL2B says that a building of greater than 1,000m² floor area, when having an extension constructed or an increase in the capacity of its building services, must have its existing windows replaced if they have a U value worse than 3.3. The required maximum U value of the replacement windows is to be 2.2W/m²K (or centre-pane U value of 1.2).

Conservatories

Conservatories greater than 30m² floor area will require a maximum window U value of 2.2 W/m²K, or a maximum centre-pane U value of 1.2. Conservatories no greater than 30m² are exempt from this requirement.

Implications for glazing As with existing housing, the situation in respect of replacement windows is basically unchanged on the 2002 requirements. For domestic-style buildings however, the Window Energy Rating option is an innovation. Overall, the prescribed U values and Window Energy Ratings for each aspect of existing buildings will enable hard coat low E to be used wherever preferred.

Overview

The various changes to Part L effectively make low E double glazing mandatory in all applications:- new buildings, replacement windows, extensions and large conservatories. In those parts of the Regulations where maximum U values or minimum Window Energy Ratings are set, these can be achieved by the use of windows containing double glazing incorporating Pilkington **K Glass**TM. There are other aspects of the new Part L which will be of interest to the fenestration industry, but less directly so. All these will be covered in more detailed Pilkington technical literature.



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