

Bulletin 10

Changes to Building Regulations Part L
(England & Wales) 2010
June 2010

In summary

The Part L Approved Documents of the Building Regulations for England and Wales have been issued, coming into force on 1st October 2010.

New buildings will have to be at least 25% more efficient than current new buildings.

For replacement windows, the requirements for Window Energy Ratings and window U-values have been tightened. Greater restrictions are placed on the centre pane U-value compliance route. The benefit of supplementing existing single glazing with low-e secondary glazing has also been recognised. Energy efficient glazing such as Pilkington **K Glass™** and Pilkington **energiKare™** are well placed to satisfy these requirements.

For non-dwellings, there will be a greater focus on limiting solar gains in the summer, increasing opportunities for high performance solar control glass such as Pilkington **Suncool™**, Pilkington **Eclipse Advantage™** and Pilkington **Solar-E™**.

This Bulletin summarises the changes which are relevant to glazing. They come into force on 1st October 2010.

Introduction

The new Approved Documents for Part L of the Building Regulations in England and Wales were published by the Government's Department for Communities and Local Government (CLG) on 30th April 2010. They will come into effect on 1st October 2010. The previous amendments to Part L in 2006 introduced very few significant changes for products from the fenestration industry. This was in recognition of the major steps the industry had taken to develop energy efficient products in time for the 2002 changes. However, the expectation was that significant improvements would be required from the industry for 2010. This Bulletin summarises the parts of the new Approved Documents that are directly relevant to glazing.

Headlines

- Significant reductions in target carbon dioxide (CO₂) emissions for all new buildings (compared with 2006)
- Requirements for Window Energy Ratings and window U-values have been tightened for replacement windows for dwellings
- Greater restrictions are placed on the use of centre pane U-values
- Recognition of benefits of supplementing existing single glazing with low-emissivity (low-e) secondary glazing
- Increased focus on the risk of overheating in summer, particularly in non-dwellings

New dwellings

The CO₂ emissions associated with the energy consumption of the whole dwelling remains as the sole criterion for demonstrating compliance, in that the predicted rate of emissions from the dwelling (the Dwelling Emissions Rate) must not be greater than the Target Emissions Rate (based on a notional dwelling). The standard government software, SAP, provides the means for determining compliance, although it has been revised to reflect the change.

For 2010, a target 25% reduction in CO₂ emissions (compared with 2006) has been set, following the well-documented roadmap that was described in our Bulletin 8 (issued August 2008).

However, this does not mean every component of a building will have to improve by 25%. As for 2006, there are no specific elemental requirements for windows other than 'long stops'. The long stop, or limiting value, for the U-value for windows, roof windows, glazed rooflights, pedestrian doors etc., has been set at 2.0 W/m²K. There is a cautionary note about designing dwellings where the glazing total area is less than 20% of the floor area leading to a need for more artificial lighting and an associated increase in energy consumption.

Implications for glazing:

As the Government's software fully takes into account solar gains, Pilkington **K Glass**[™] with its high g-value will generally result in a dwelling having a similar emissions rate to one with soft coat low-e glass.

Adding low iron glass, such as Pilkington **Optiwhite**[™], increases the g-value of the glazing and improves the Dwelling Emission Rate. The limiting U-value of 2.0 means that low-e double glazing remains the minimum. Although not a requirement, triple glazing such as Pilkington **energiKare**[™] Triple may become increasingly more common in new dwellings as demonstrated by its prevalence in low energy houses.

Existing dwellings

In existing dwellings, certain 'controlled fittings' remain within the scope of the Building Regulations. These include replacement windows for existing dwellings and windows for extensions. The requirements apply to whole windows, roof windows, rooflights and doors (including the frame). Applications where only the glass is being replaced in the existing frame are outside of the scope. The standards for controlled fittings are summarised in Table 1.

Table 1. Proposed standards for controlled fittings for existing dwellings

Fitting	Standard
Window, roof window or rooflight	Window Energy Rating (WER) = band C (or better) or window U-value = 1.6 W/m ² K
Doors with >50% glazed area	U-value = 1.8 W/m ² K
Other doors	U-value = 1.8 W/m ² K

Where the external appearance of the façade or character of the building prevents the standards in Table 1 being satisfied, replacement windows should have a centre pane U-value of 1.2 W/m²K or single glazing should be supplemented with low-e secondary glazing.

Implications for glazing:

Although Window Energy Ratings are not the sole measure for replacement windows and windows for extensions, there is no doubt that the demand for windows to be energy rated is

increasing. As a minimum rating of band C is required, this acknowledges the positive contribution that energy efficient windows can make in delivering CO₂ and energy savings for dwellings. Energy efficient windows, such as those containing Pilkington **energiKare**[™] with its high g-value, will continue to meet and exceed the requirements, with options available to achieve an A rating. Due to its hard and durable coating, Pilkington **K Glass**[™] is the ideal choice for secondary glazing.

Conservatories

Contrary to the proposals made during the consultation stage, conservatories with a floor area less than 30m² are still exempt from the energy efficiency requirements. This is provided that there is an appropriate thermal separation between the conservatory and dwelling and the heating system of the dwelling is not extended into the conservatory. Where these conditions cannot be met, then the glazed elements should meet the standards given in Table 1. If the thermal separation between the conservatory and dwelling is removed and not replaced, then the conservatory is no longer considered exempt.

Implications for glazing:

Although small, domestic conservatories will not be included for the first time (as originally proposed), Pilkington **K Glass**[™], Pilkington **Activ**[™] Blue and Pilkington **Activ**[™] Neutral will still help to deliver energy savings and comfort benefits to the consumer and allow year round use.

New buildings other than dwellings

As for dwellings, the only means of achieving compliance is on the basis of total carbon dioxide emissions of the building, using the government approved software SBEM. A target of a 25% (aggregate) reduction in CO₂ emissions across all new non-dwellings (c.f. 2006) has been set. There are no specific elemental requirements for windows, other than 'long stops'. The long stops, or limiting-values, have been left unchanged, with the limiting U-value for windows, roof windows, rooflights, curtain walling, pedestrian doors etc., being 2.2 W/m²K. There are no limits for ground floor display windows and similar glazing.

Implications for glazing:

The heat loss, solar gain and daylight transmission of glazing is taken into account by SBEM. As the significance of each factor will vary according to the design and type of building, and whether it is air-conditioned or naturally ventilated, it is not possible to draw overall conclusions about the impact on glazing. The limiting value does, however, mean that non low-e glass is not allowed.

Existing buildings other than dwellings

The standards for controlled fittings (i.e. replacement windows) for existing buildings other than dwellings are summarised in Table 2.

Table 2. Standards for controlled fittings for existing buildings other than dwellings

Fitting	Standard
Window, roof window or rooflight ¹	U-value for whole unit = 1.8 W/m ² K
Windows in buildings domestic in character ²	Window Energy Rating = band C
Doors with >50% glazed area	U-value = 1.8 W/m ² K

¹ excluding display windows

² e.g. student accommodation, care homes, etc.

Where the external appearance of the façade or character of the building prevents the standards in Table 2 being satisfied, replacement windows should have a centre pane U-value of 1.2 W/m²K or single glazing should be supplemented with low-e secondary glazing.

Specifically for curtain walling as a controlled fitting in non-dwellings, the standard is that the overall U-value should be no greater than the better of 1.8 W/m²K or a limiting U-value (U_{limit}) given by:

$$U_{limit} = 0.8 + ((1.2 + (FOL \times 0.5)) \times GF)$$

where FOL = fraction of opening lights and GF = glazed fraction

For extensions to existing non-dwellings, glazed areas should generally not exceed those given in Table 3.

Table 3. Opening areas in the extension

Building type	Windows and personnel doors as % of exposed wall	Rooflights as % of roof
Residential	30	20
Assembly, offices and shops	40	20
Industrial and storage	15	15
Vehicle access doors and display windows	As required	N/A
Smoke vents	N/A	As required

Limiting the effects of solar gains in summer

There is a greater focus on ensuring that the building has appropriate passive solar control, thus limiting effects of solar gains in summer. The requirement applies to all non-dwellings and aims to reduce the need for air-conditioning or reduce the installed capacity of an air-conditioning system. Reasonable provision can be considered if the total solar gains during the summer period are no greater than for the given reference cases. This recognition complements an independent study¹ undertaken to quantify the potential energy and CO₂ savings from the greater use of solar control glass in the EU, including the UK.

¹ 'Impact of Solar Control Glazing on energy and CO₂ savings in Europe' (TNO Report 034-DTM-2009-01988B)

Implications for glazing:

For extensions to non-dwellings, U-values have been tightened up. As a recognition of the importance of taking account of the g-value in such buildings, Window Energy Ratings can continue to be used as a means of compliance for non-dwellings which are domestic in character, provided a minimum band C is achieved. There is recognition of the benefits of low-e glass in secondary glazing for which Pilkington **K Glass**[™] is ideally suited.

The greater focus on limiting solar gains in the summer through passive control measures, particularly in non-dwellings, will result in an increased use of high performance solar control glass, such as Pilkington **Suncool**[™], Pilkington **Eclipse Advantage**[™] and Pilkington **Solar-E**[™].

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Historic and traditional buildings

Although work on most existing buildings will need to comply with the energy efficiency requirements, special considerations may apply to some historical and traditional buildings. Specific guidance is provided as to where special considerations apply and how to arrive at an appropriate balance between heritage and energy conservation.

Implications for glazing:

An appropriate balance may be possible to achieve using products that can replace energy inefficient single glazing in older traditional buildings whilst retaining the original frames. Utilising advanced Pilkington **Spacia™** vacuum glazing technology, Pilkington **energiKare™** Legacy has the same thickness as single glazing but with four times better thermal insulation.

Timescale

The requirements will be implemented on 1st October 2010.

More information

For more information on Part L 2010, or our range of products, please contact our Technical Advisory Service (email us at pilkington@respond.uk.com or phone on 01744 692000).



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