The Building Regulations - Part L and its impact on aluminium glazing systems

What is Part L?

Approved Document L is the part of the Building Regulations and accompanying guidance that deals with energy use in buildings. Officially titled *Conservation of Fuel and Power*, the new legislation aims to cut carbon dioxide emissions from buildings as part of the Government's wider commitment to achieve a national reduction of CO_2 emissions by 20 per cent.

Significantly, under the new regulations, which came into force on 1st April 2002, the changes apply not only to windows and doors fitted to new buildings, but also to replacement units installed in existing buildings.

The new regulations mean that windows and doors now have to be better insulated. The previous U-value of 3.3W/m²K has been replaced by the tougher U-value of 2.2W/m²K for metal-framed systems. For replacement doors and windows, there is the option of installing glazing with a centre pane U-value of 1.2W/m²K or less. Scotland, however, does not have this option.

AD L1 relates to private and public housing and AD L2 to all other buildings, such as offices, hospitals and schools. The requirements for buildings in Scotland are different to England and Wales, and are contained in Part J, which was implemented on 4th March 2002. Northern Ireland and Eire have their own regulations, which are likely to follow Part L.

Demonstrating Compliance

There are three ways to demonstrate compliance:

Elemental Method. This method applies to refurbishment, as well as to new build projects. Windows and doors must achieve an area average weighted value of 2.2W/m²K or less. However, there are limits on the allowable areas of glazing

Depending on the orientation and end use of the building, unless compensating measures are taken to prevent overheating, such as the addition of brise soleil sunshading.

Whole Building Method (Target U-values). This option, for new build only, allows the designer to off-set different elements of the whole building, such as roof insulation, boiler efficiency air conditioning and lighting. The flexibility of this approach means that where energy efficiency measures are included, increases in glazed areas can be justified.

Carbon Emissions Method. The most complex method, these calculations (for new buildings only) offer the designer the greatest flexibility. It is also the most suitable option for highly glazed buildings. The annual carbon dioxide emissions for the building are determined and compared against the figures for a 'notional' building, which should not be exceeded.

It is important to note that only the building designer can demonstrate compliance with the Building Regulations. Manufacturers and fabricators of glazing systems can only advise on the U-value of their products and cannot demonstrate compliance. This is because of the other elements of the building that have to be taken into consideration.

Replacement Windows

There are two routes for assessing compliance of replacement windows:

FENSA gives installers the opportunity to self-certify the products they install. This only applies to AD L1.

For further information, visit **www.fensa.co.uk**

The local authority building control office should be approached for project approval in the usual way.

Assessing Performance of Windows and Doors

There are three methods to assess window and door performance:

Use of the indicative U-values in Tables A2 and A3 of the Part L regulations

Hot box tests

Calculation using the standards set out in Document L

Assessing Performance of Curtain Walling

The standards stated in Document L2 should be used to calculate curtain wall U-values. Glazed areas can be considered as windows (2.2W/m²K), whereas insulated spandrel panels can be taken as walls (0.35W/m²K). It is therefore essential that designers calculate and specify the U-value for curtain walling and windows and doors.

Interface Details

Interfaces are critical areas and must be carefully assessed to ensure continuity of insulation and thermal performance. These details must also be controlled at design and construction stages to ensure standards for air tightness are met.

Further Information

For more information on the new regulations and their impact, we would suggest:

Guide to Assessment of the Thermal Performance of Aluminium Curtain Wall Framing 1996, published by the Council for Aluminium in Building (CAB)

CWCT methods

BRE IP5/98

Setting the Standard No. 4, published by the CAB

Approved documents L1 and L2, DTLR **www.safety.dtlr.gov.uk/bregs/brads.htm** or call 0870 600 5522.