



PILKINGTON
NSG Group Flat Glass Business

SOLAR SO GOOD FOR WINDOWS

Amongst the queries we receive about the thermal efficiency of windows, a number are about solar control. Coping with excessive heat coming into a building in the summer months can be as much of a problem as making sure heat is kept in during winter months. You only need to visit a DIY store and see the number of domestic air conditioning devices for sale to realise the increase in demand for this type of product. Anything that uses fuel to heat or cool is adding carbon emissions into the atmosphere. However, glass is often overlooked as an energy management product, its ability to retain heat (thermal efficiency) is fairly well publicised but its solar control properties are often ignored for housing. Here Garry Smith, Senior Technical Advisor at Pilkington, answers some common questions about this important issue.

How is solar gain relevant to building regulations?

The new Part L of the building regulations is mainly concerned with insulation of buildings; however, it does also state that they should not overheat. Having large areas of glass that contribute to the solar transmission offsets the heat losses through the glass when facing the sun. The emphasis of the regulation has been to have glass with low U values and high solar transmission figures such as Pilkington **Optitherm Glass™**. If the glass area is too large e.g. most of the south facing façade and there is only one external wall as in an apartment, then excessive solar gain could be a problem rather than a benefit. However, the circumstances that lead to a problem of this nature are exceptional.

How is solar gain controlled?

There are a number of methods of reducing solar gain. Products can be compared using the total solar heat transmission data (also known as g value) provided by glass manufacturers. For example, a Pilkington **K Glass™** unit will allow 72% of the energy in (g value .72). Depending on the application, we can add tints to the glass, heat reflecting coatings or both to reduce the solar transmission. For domestic properties a popular economic choice is the body tinted products, their

subtle colours can enhance the aesthetic qualities of a building. The use of 4mm green glass for the outer pane reduces the energy transmission to 51%, however, in reducing the solar gain the light transmission falls but not by a similar amount. Without the green tint, the light transmission would be 74%, whereas with green it falls to 67%. A small reduction in light transmission is not dramatic but the corresponding reduction in solar gain from 72% to 51% is significant and beneficial.

By using tints and coatings we can selectively exclude certain parts of the spectrum of energy that comes from the sun to give a range of solar control properties. At the most extreme we can get close to the percentage of light transmitted to being double that of the solar energy.

Are there any other options?

Shutters, curtains and blinds also reduce solar transmission but they do defeat the idea of a feature window. Even with solar control you may still need ventilation to let out the heat that has already entered the living space.

Solar control is just one option for windows but it doesn't exclude the use of low e glass. The window performance can be tuned to suit the circumstances from a glass range that includes colours and finishes to allow a choice of performance and appearance.

For information on the Pilkington product range for Solar Control, visit www.pilkington.co.uk