

# SELECTING ENERGY EFFICIENT WINDOWS



## Energy Efficient Windows

The windows that we select for our homes bring light, warmth, and beauty into them. Poorly selected windows are a major source of heat loss in the winter and can reduce comfort and the amount of effective living space. Energy efficient windows, when correctly selected and installed, will help to minimise the heating and lighting costs and will also increase comfort and the amount of useable living space.

In the past, selecting energy efficient windows has been difficult for consumers and there is a need for a method of selecting energy efficient windows that is both easy to understand and independent.

## Save money by selecting energy efficient windows.

### Clear and independent

The British Fenestration Rating Council (BFRC) window rating system meets this need and allows consumers to rapidly compare the energy efficiency of different products.

Windows are rated using a familiar A to G scale on the basis of their total energy efficiency, where an A-rated window is more energy efficient than a G-rated window. Consumers can quickly and easily choose the most suitable window for their needs.

The BFRC is an independent body that controls energy rating of windows as part of a European scheme and is not simply another trade association.

### Energy rated windows

A BFRC rating simply and effectively assesses the energy performance of the whole window. This rating covers the frame material, the frame design, the glass type and all the other components that make up the window. For the first time it is possible to compare the energy performance of a complete window simply and quickly.

Make an informed choice. Ask to see the BFRC rating for windows before purchasing. If in doubt, check for local manufacturers of rated windows on the web at [www.energy-efficient-windows.org.uk](http://www.energy-efficient-windows.org.uk).

### Saving money

Energy efficient windows will cost more initially but will not only improve comfort but will save energy and money for the life of the window. Over the life of a window, the cost of heat lost is greater than the purchase cost. Choosing the most energy efficient window will save money.

### Choosing windows

The BFRC rating makes selecting windows for energy efficiency easy, it allows windows to be easily compared to find the most energy efficient product.

If windows are not BFRC rated, selecting windows for energy efficiency is more difficult and the following information should be considered.

### Reducing air flow

Uncontrolled air flow through a window loses heat and creates uncomfortable draughts.

Windows with compression seals reduce uncontrolled air flow, provide good ventilation when opened and have better resistance to uncontrolled air flow than the sliding seals on vertical sliding windows.

Installation workmanship also affects the air flow through a window. Reputable installers should always be chosen to reduce air flow and heat loss.

### Reducing heat loss

An important factor in the energy efficiency of a whole window is the U-value. A window with a low U-value loses less heat than one with a high U-value.

## The cost of heat lost through a window is greater than the purchase cost.



Energy Window	
Window Ltd. XYZ 68/abc	
Energy Index (kWh/m <sup>2</sup> /year) <small>(Energy Index certified by BFRC and based on UK standard window. The actual energy consumption for a specific application will depend on the building, the local climate and the indoor temperature)</small>	<b>-14</b>
The climate zone is:	<b>UK</b>
Thermal Transmittance (U-value)	1.7 W/m <sup>2</sup> K
Solar Factor (g-value)	0.50
Air Leakage (L-value)	0.10 m <sup>3</sup> /m <sup>2</sup> /h
<a href="http://www.bfrc.org">www.bfrc.org</a>	
<small>This label is not a statutory requirement. It is a voluntary label provided as a customer service to allow consumers to make informed decisions on the energy performance of competing products.</small>	

The following factors affect the whole window U-value:

- The type of glazing material.
- The number of glazing layers.
- The size of the cavity between the glazing layers.
- The type of gas in the cavity between the glazing layers.
- The design, material and type of frame and the other components.

**Note:** Always ensure that a quoted U-value is for the whole window and not simply for the glass.

### Glazing materials

Clear float glass has previously been the major material used for windows in houses. Advances in glazing technology mean that special glass is now available to control heat loss through the window. This low-emissivity (low-e) glass has special surface coatings to reflect heat back through the window. The low-e coatings reflect between 40% to 70% of the heat that is normally transmitted through clear glass, while allowing the full amount of light to pass through. This type of glass is now standard under the Building Regulations for most homes in the UK (see panel at right).

### Layers of Glass and Air

The traditional approach to improving the energy efficiency of a window has been to increase the number of layers of glass and air.

Double- or triple-glazed windows have insulating air- or gas-filled spaces between each pane. Each layer of glass and the air spaces resists heat flow. The width of the air spaces between the panes is important, air spaces that are too wide have higher U-values and allow too much heat transfer. Highly energy efficient windows are manufactured with inert gases (argon or krypton) in the spaces between the panes because these gases transfer less heat than air.

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**Select energy efficient window to improve comfort and reduce greenhouse gases.**

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### Frame Materials

Window frames are available in a variety of materials and the frame material can be selected for price, maintenance or visual appearance. Any frame material can produce energy efficient windows if designed correctly. For consumers, it is important to get the most energy efficient window from the frame material that is chosen.

### New technology

New technologies are being used to develop and improve the energy efficiency of windows. Typical of these is the concept of 'warm edge' glazing to reduce heat losses at the edges of the glazing unit. This improves the BFRC rating.

Irrespective of these technology improvements, the BFRC rating system will be applicable and will allow consumers to select energy efficient windows with a minimum of effort.

To compare BFRC rated windows, simply look at the label and compare the ratings. Select the window with the highest rating for the best energy efficiency and lowest heating costs.

### THE KEY FACTS

- **The best way to compare windows for energy efficiency is to use the BFRC rating.**
- **BFRC rating is on a scale of A to G, where an A-rated window is more energy efficient than a G-rated window.**
- **Look for the BFRC label on windows and in literature to easily compare windows for energy efficiency.**
- **Different combinations of frame style, frame material, and glazing can yield very different results when trying to compare energy efficiency and cost. All of these factors can be compared using the BFRC rating.**

### THE LEGAL REQUIREMENTS

The requirements for the energy efficiency of windows and houses are covered by the Building Regulations.

New regulations that require improved thermal efficiency of all building products are being introduced throughout the UK. The specific requirements depend on the location of the building in the UK. Consumers are advised to contact their local Building Control Officer for details of the local requirements.

For further details on the BFRC, visit the British Fenestration Rating Council web site at [www.bfrc.org](http://www.bfrc.org).

February 2004

Produced by the British Fenestration Rating Council ([info@bfrc.org](mailto:info@bfrc.org)) and supported by the Housing Energy Efficiency Best Practice programme.