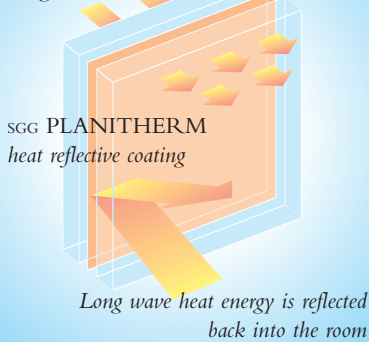


### HOW LOW-E GLAZING WORKS

Short wave energy from the sun in the form of daylight and heat passes through the glass



### Meeting and exceeding current requirements

Document L is the part of the Building Regulations which addresses standards of energy efficiency in buildings. The Government has fundamentally

revised Document L, elevating the acceptable levels of thermal insulation in building materials, so that it can meet its commitments to improve our environment. Since 1st April 2002 all new planning applications are subject to the new requirements published in Document L of the Building Regulations. This means that, in most cases, windows fitted with standard glass will not be acceptable.

Timber and PVCU windows now both need to achieve a maximum U-value of 2.00W/m<sup>2</sup>K. To achieve this windows will generally need to be fitted with low-E units.

Windows shall be deemed to comply, provided they meet the requirements in Table A1 of Document L, with a sealed unit which is shown to achieve a maximum U-value of 2.00W/m<sup>2</sup>K.

Howarth Windows & Doors intends achieving the requirements of

Document L by increasing the air gap in the sealed units to 16mm and using low-E  $\epsilon n = 0.1$ .

Thus, referring to Table A1 (see below) Howarth's window/glass combined U-value is deemed to achieve 1.9W/m<sup>2</sup>K. However, the combined U-value (frame and glass) can also be calculated using an approved software program. This can be used to provide U-values of individual windows, though an average calculated U-value can be achieved using benchmark sizes. Using this method Howarth has achieved benchmark values of 1.81 for 24mm low-E glazing.

It is the buyer's responsibility to advise Howarth when windows need to meet Document L specifications. Windows will be supplied with clear (non low-E) glass unless stated otherwise.

**NOTE:** If frames are to be glazed on-site, it is the builder's responsibility to ensure that the units will meet the new regulations and that the glazing is carried out correctly.

TABLE A1

Indicative U-values (W/m <sup>2</sup> K) for windows and rooflights with wood or PVCU frames, and doors	Gaps between panes		
	6mm	12mm	16mm or more
Single Glazing		4.8	
Double Glazing <b>air filled</b>	3.1	2.8	2.7
Double Glazing <b>low-E <math>\epsilon n = 0.2</math></b>	2.7	2.3	2.1
Double Glazing <b>low-E <math>\epsilon n = 0.15</math></b>	2.7	2.2	2.0
Double Glazing <b>SGG PLANITHERM low-E <math>\epsilon n = 0.1</math></b>	2.6	2.1	1.9
Double Glazing <b>SGG PLANITHERM Future N low-E <math>\epsilon n = 0.05</math></b>	2.6	2.0	1.8
Double Glazing <b>argon filled</b>	2.9	2.7	2.6
Double Glazing <b>low-E <math>\epsilon n = 0.2</math>, argon filled</b>	2.5	2.1	2.0
Double Glazing <b>low-E <math>\epsilon n = 0.1</math>, argon filled</b>	2.3	1.9	1.8
Double Glazing <b>low-E <math>\epsilon n = 0.05</math>, argon filled</b>	2.3	1.8	1.7

### ROBUST CONSTRUCTION DETAIL

The Robust Construction detail highlights the need to build in window frames correctly to help limit thermal bridging and air leakage. This means the brickwork cavity must be closed before the window frame can be fitted. The cavity can be closed by either using a PVCU cavity closer, or any other means, as long as the U-value meets that of the cavity closer (minimum 0.45m<sup>2</sup>K/W). The frames must then be built in with a minimum overlap of 30mm over the cavity (see right). These details apply to all window frames including bays and also door and entrance frames.

