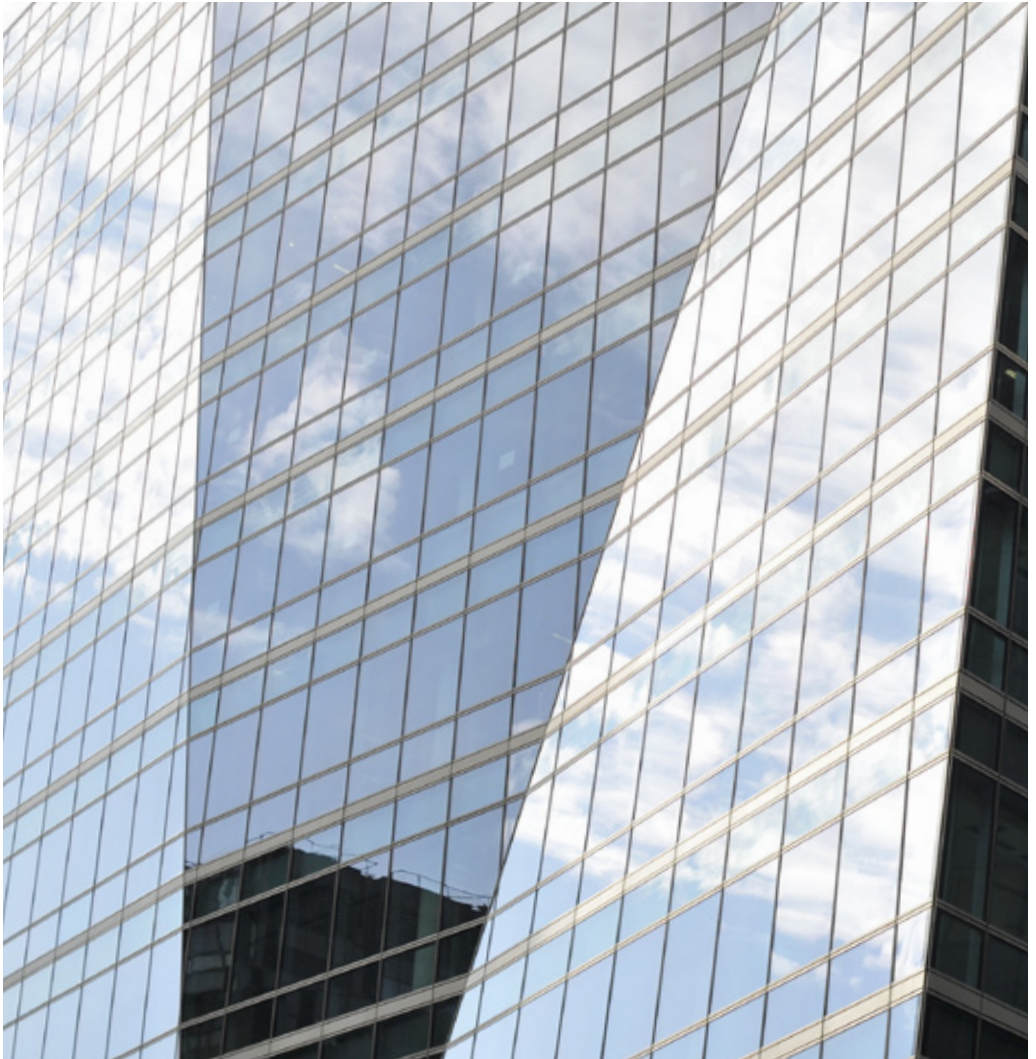


Low Emissivity Glass and its Visual Quality



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This document covers the thermal insulation requirements for the conservation of fuel and power in the United Kingdom.

The four Nations within the United Kingdom, (England, Wales, Scotland, and Northern Ireland) have a legislative requirement for the conservation of Energy. In most cases, installing energy efficient windows incorporating low emissivity glass will enable the more rigorous standards of thermal insulation to be met.

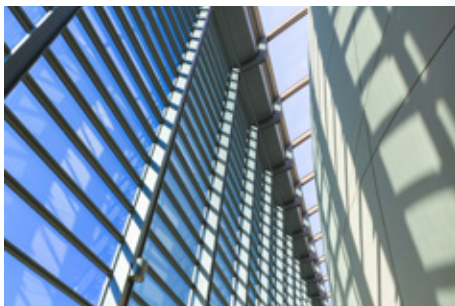
Whilst there are variations in the different regions, these are primarily to do with scheduling and specific levels of insulation. The main differences are shown in the table on page 5.

What is low emissivity (Low-e) glass?

Low-e glass is an essential component of most energy efficient windows and doors. It has a surface coating that operates as follows:

- It allows short wavelength heat from the sun to enter your home through the glazing.
- This solar energy works with your domestic heating system to warm up your room, which then gives off long wavelength heat radiation.
- A large proportion of that long wave heat would vanish back out through windows made of ordinary glass. However, the Low-e coating reflects that heat back into your room so the heating system does not have to work as hard to maintain a comfortable room temperature.

Will Low-e glass meet the Building Regulations/Standards?



Better than merely meeting the Regulations, Low-e glass will enable you to both achieve and surpass the new targets for windows and doors.

Are there any disadvantages?

We have explained the significant advantages to your pocket and comfort. In most cases there is a requirement to use Low-e glass within new or replacement windows and doors in order to achieve the required improvements in the thermal efficiency of your home.

Whilst there are significant advantages to glazing with a thermally efficient glass there are occasionally some side effects which are as follows:

Tint: Early versions of Low-e glass may make some light coloured materials (such as net curtains) appear slightly darker when viewed directly through the glass. Recent innovations in Low-e coatings which are more neutral now make this effect less evident.

Haze: This phenomenon may occur at certain times of the day when the sun is at a particular angle or when viewed under some lighting conditions. This phenomenon is also influenced by the type of Low-e coating.

External condensation: Thermally efficient windows are so good at keeping the heat in that the outer pane can get cold as it is no longer being warmed by wasted heat. Under some weather conditions and at certain times of the year, this can result in the formation of condensation on the outside surface of the glass.

This is a positive indication of a thermally efficient window.

Dependent on the coating type, the glass substrate and the thickness, slight colour / hue differences may be noticeable on Low-e glass. These are not detrimental to the functioning of the unit and are deemed not to be a defect.

Some Low-e glass is good at solar heat gain, which is a benefit in some situations; harvesting free heat energy from the sun, helping to reduce heating demands. However, in other situations this can cause overheating resulting in an uncomfortable environment.

It is a recommendation that a combination of Low-e and solar control glazing should be considered for large glazed areas, particularly south facing conservatories. Guidance should be sought from the manufacturer or supplier.

How is visual quality assessed?



The visual quality of a window is assessed by looking through it from the room side, at right angles to the glass and standing at a distance of not less than 2 metres from the glass. (In the case of any type of safety glass this distance increases to 3 metres.)

It should also be viewed in natural daylight and not direct sunlight, with no visible moisture on the surfaces of the glass.

Provided your vision through the glass is not disturbed under these conditions, for example, by scratches or bubbles the glass within your window or door is of a good visual quality.

For further information please refer to the following GGF leaflets:

- *Quality of Vision – Double Glazing*
- *Condensation – Some Causes, Some Advice*

Regional Variations for Thermal Regulations for the Conservation of Fuel and Power in the UK

Note 1: The Table below applies to replacement windows and doors in dwellings.
 Note 2: Providing the total area of new windows and doors in an extension is not more than 25% of the floor area and meet the requirements of L1B Table 1, Building Regulation compliance is assured.
 Note 3: Requirements for buildings other than dwellings may vary.

	England	Wales	Scotland	Northern Ireland
Regulation/Standard	Approved Document L1B (for existing dwellings)	Approved Document L (Wales)	Scottish Building Standards 6	Northern Ireland Building Regulations 2000 Part F
Applicable Date	April 2014	July 2014	May 2011	October 2012
Next Potential Change Date	October 2016	2016	2015	2015
Windows	WER Band C Uw1.6 W/ m ² K	WER Band C Uw1.6 W/ m ² K	WER Band C Uw1.6 W/ m ² K	WER Band C Uw1.6 W/ m ² K
Windows Exceptional	1.2 W/m ² K Centre Pane	1.2 W/ m ² K Centre Pane		
Doors	Uw1.8 W/ m ² K	Uw1.8 W/ m ² K		
Conservatories	Exempt if <30 m ² ; separated from main building; heating system not extended from main building	Exempt if <30 m ² ; separated from main building; heating system not extended from main building	Exempt if <8 m ² (domestic) or separated from main building; heating system not extended from main building; or >50m ² (non-domestic);	
Applicable Competent Persons Scheme	Compliance verified by e.g. FENSA; CERTASS	Compliance verified by e.g. FENSA; CERTASS	Self Regulation	Self Regulation
Listed Buildings; Buildings in Conservation Areas (Article 4); Ancient Monuments; English Heritage	Dispensation can be granted where compliance would unacceptably alter the character or appearance of the building	Dispensation can be granted where compliance would unacceptably alter the character or appearance of the building		
Key	Uw = Whole Window U-Value			

