

U-VALUES

SUMMARY

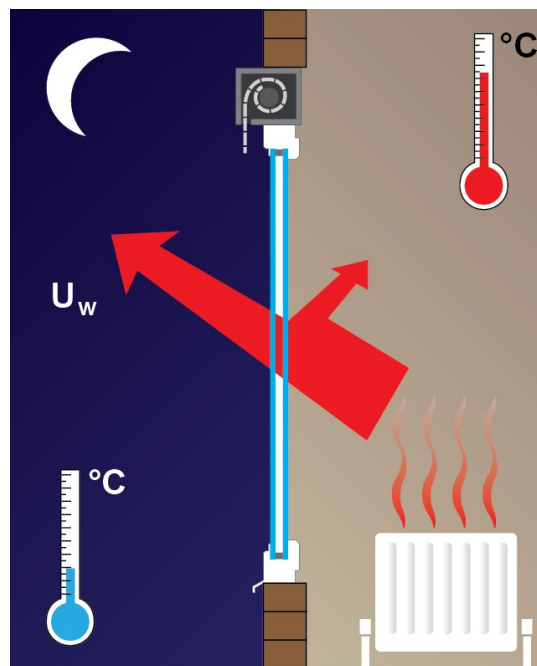
- ✓ U-value indicates the thermal performance of a window system; the lower the U-value, the lower the heat loss.
- ✓ Installing blinds and shutters can significantly reduce the U-value of glazing.
- ✓ The ES-SDA database will give you U-values for different shading products in combination with glazing.
- ✓ Heat loss is only part of the story, preventing heat gain and controlling glare are also important performance characteristics of blinds and shutters.

1.0 INTRODUCTION

Despite the improvements in glass technology, windows are still a weak point in a building's insulation. With increasing costs of energy it makes sense to prevent heat loss through glazing. Blinds and shutters are proven to reduce the amount of heat lost through windows as shading works as an insulator of the transparent parts of a building. U-value is one of the key values in assessing the energy performance of a window system (glass + shading).

2.0 WHAT IS A U-VALUE?

A U-value is a measure of thermal transmittance which is the ability of a material to transfer heat. All components of a building have U-values, for example masonry, insulation materials, plasterboard, metals and also windows, blinds and shutters.



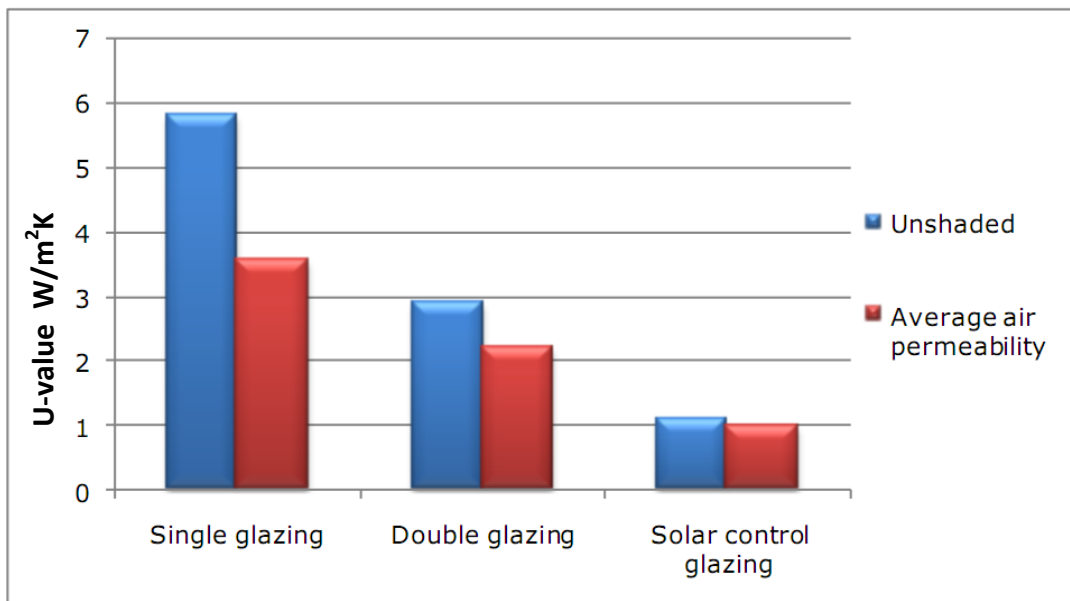
The measure is usually expressed as Watts per metre squared Celsius W/m^2C or Watts per metre square Kelvin W/m^2K .

3.0 WHAT DOES IT MEAN?

The lower the U-value of a material, the lower the heat loss through it. Therefore any material with a low U-value is a good insulator. For example, the U-value of a standard single-glazed window is 5.8 W/m²K compared to a standard double-glazed window with a typical U-value of 2.9 W/m²K.

4.0 U-VALUE FOR WINDOWS WITH BLINDS AND SHUTTERS

Insulating properties of windows can be further enhanced by installing blinds and shutters. The graph below shows that in all cases the U-value of glazing is improved by installing blinds or shutters.



The graph also demonstrates that blinds and shutters are more effective when used in combination with older, lower performing windows such as those which are single glazed or first generation double glazed.

An internal blind with average air permeability can reduce the heat loss through single glazing by up to 40%. The same blind will reduce the heat loss through solar control glazing by typically 11%.

		SINGLE GLAZING U = 5.8 W/m ² K	DOUBLE GLAZING U = 2.9 W/m ² K	SOLAR CONTROL GLAZING U = 1.1 W/m ² K
INTERNAL BLIND	High air permeability	3.96	2.35	1.01
	Average air permeability	3.54	2.20	0.98
	Low air permeability	3.20	2.06	0.95

In CIBSE Guide A - Environmental Design it states that a conventional internal roller blind (unsealed) would have a U-value of 2.53 W/m²K when installed on double glazing. If the same blind was fully sealed in a cassette, casing or channels on double glazing, then this U-value could be improved to 1.9 W/m²K.

In general, a product such as an insulated shutter which is fully sealed will give a lower U-value and be more effective in reducing winter heat loss than an internal solution.

5.0 FURTHER INFORMATION

See the BBSA's Guide to Low Energy Shading (GLES), videos and further information at:

www.shadeit.org.uk

BS EN 13125:2001 Shutters and blinds - Additional thermal resistance - Allocation of a class of air permeability to a product.

<http://shop.bsigroup.com/ProductDetail/?pid=00000000030040552>

BS EN 16012:2012+A1:2015

Thermal insulation for buildings. Reflective insulation products. Determination of the declared thermal performance

<http://shop.bsigroup.com/ProductDetail/?pid=00000000030294320>
