What is a U-value

To put it simply, U-Value is the measure of the rate of heat loss through a material. Thus in all aspects of home design one should strive for the lowest U-Values possible because the lower the U-value – the less heat that is needlessly escaping. So for example single glazed windows have a typical U-value of 5.6 while double glazed windows have a typical U-value of 2.8.

The calculation of U-values can be rather complex - it is measured as the amount of heat lost through a one square meter of the material for every degree difference in temperature either side of the material. It is indicated in units of Watts per Meter Squared per Degree Kelvin or W/m^2K. Note that Kelvin is used as the scale of temperature difference, but this is numerically equal to ^oC. So for example, one square meter of a standard single glazed window will transmit about 5.6 watts of energy for each degree difference either side of the window or a U-Value of 5.6. A double glazed window will be significantly better with a U-value of 2.8 i.e. only transmitting 2.8 watts of energy in similar conditions.

Typical U-Values

Note: *These U-values are provided as a guide. U-values may vary depending on the particular construction e.g. block or brick walls.*

WALLS (Building Regulations: 0.45)

Cavity Wall Insulation	**U-Value**
100mm Blown Polystyrene	0.30
100mm Blown Mineral Wool	0.30
100mm Blown Cellulose Fibre	0.30
60mm Extruded Polystyrene Insulation	0.40
35mm Polyurethane Foam Board	0.39
35mm Phenolic Foam Board	0.37
Timber Frame 150mm, Mineral Quilt	0.25
Timber Frame 140mm, Cellulose Fibre	0.19
Safewarm Home Construction	0.31

External Wall Insulation	**U-Value**
60mm Moulded Polystyrene	0.44

Internal Wall Insulation	**U-Value**
50mm Expanded Polystyrene	0.48
38mm Polyurethane	0.45

FLOORS (Building Regulations: 0.45)

	U-Value
Note: *U-values are based on concrete slab construction*	
60mm Polystyrene	0.45
38mm Polyurethane	0.45

ROOF, ATTIC AND ATTIC ROOM (Building Regulations: 0.25)

Pitched Roof with Attic Space	**U-Value**
Note: *To achieve these U-values, insulation must be between and over ceiling joists.*	
150mm Glass Wool	0.25
150mm Rock Wool	0.23
150mm Sheep's Wool	0.23
200mm Glass Wool	0.19
200mm Cellulose Fibre	0.16

Attic Room	**U-Value**
70 mm Polyurethane	0.21
130 mm Expanded Polystyrene	0.25

WINDOWS (Building Regulations: 3.30)

	U-Value
Single Glazing	5.6
Double Glazing	2.8
Double Glazing, with Argon	2.6
Double Glazing, Low-E	1.8
Double Glazing, Low-E with Argon	1.5

For further ideas on ways to save energy at home contact the Irish Energy Centre's **Energy Hotline** at **1850-376.666** (for the price of a local call).

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