



TEACH Passiv

REGISTERED
PRACTICE

2013

RIAI



**CERTIFIED
PASSIVE HOUSE
DESIGNER**

TEACHPASSIV.COM IS AN
INITIATIVE OF:

MARK STEPHENS ARCHITECTS

OFFICE

Rooskey
Foxford
Co. Mayo
Ireland

MOBILE

085 159 4084

TEL

094 92 57621

EMAIL

mdstephens@gmail.com

WEB

MarkStephensArchitects.com

FACT SHEET No. 6

Why Triple glazed windows?

This Fact Sheet (No. 6) asks the question why do you need triple glazed windows for Passivhaus construction?

If you look at the typical u-values for domestic windows in the UK and Ireland you will see the following:

Single-glazed = 4.0-5.0 W/m²K

Double glazed = 2.0-3.0 W/m²K

Triple glazed (Passivhaus) = <0.8 W/m²K

But these are just figures, what do they exactly mean? Below are a few examples:

For a single 1 m² window in a house in Dublin, removing a single pane of glass (going from triple to double glazed) contributes to nearly double the heat loss.

For a full explanation of the maths/physics behind this heat loss, [CLICK HERE](#)

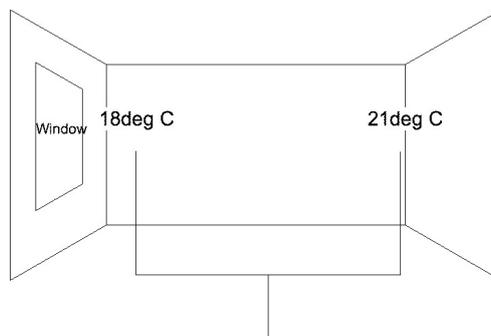
This is the heat loss, orientating this window towards the south will give heat gains, with the same size window you will gain 4.65x as much heat when the window is positioned to the south compared to the north:

For a full explanation of the maths/physics behind this heat gain, [CLICK HERE](#)

The difference between triple and double glazed is obviously important but the g-value of the glass also plays a vital role. The g-value is the fraction of the heat that enters the building through the glass. This is why a double glazed window in a southern climate would meet the Passivhaus certification requirements.

For a full explanation of the maths/physics behind the g value, [CLICK HERE](#)

Maths and Physics are good but what does it mean in reality; a key characteristic of Passivhaus design is Thermal Comfort and this is observed where the asymmetry of temperatures at the window and the hottest part of the room (on a cold day) should be less than 4 Kelvin (anything greater than a 4 Kelvin difference and you'll feel uncomfortable). And it is only where the windows have a U value < 0.85 W/m²K (Central Europe) i.e. Triple glazed windows that this will occur.



Temperature difference = 3 Kelvin ie comfortable when using triple glazed windows



[Handbook by Janet Cotterell and Adam Dadeby available from GreenBooks.co.uk](#)

If you are new to Passivhaus methodology I would highly recommend [The Passivhaus](#)