

Acoustic Insulation

Understanding the mechanics and science behind noise penetration can be complex. Below are some acoustic basics to consider:

1. The human ear perceives a 10dB reduction in noise as a halving of the volume.
2. Noise consists of level, frequency and duration of a sound source.
3. A given 'noise' may comprise many different levels and frequencies of individual sounds.
4. Different materials (such as bricks, timber, glass etc.) transmit noise differently. Some materials are better at reducing the passage of certain frequencies. This is due to the different densities of each material.
5. Differing annoyance levels and sensitivities occur for different individuals

Relative loudness to speech	Sound level (dB)	Perception example
x16	100	Loud car horn
x8	90	Very loud heavy traffic or Lawnmower
x4	80	Noisy office or inside a bus
x2	70	Loud busy street or loud TV
Normal speech	60	Noisy normal conversation
x 1/2	50	Average office
x 1/4	40	Moderate quiet office or library
x 1/8	30	Quiet conversation
x 1/16	20	Quiet room

For acoustic benefits, secondary glazing is fitted to the existing window in such a way as to maximise the air space between the pane of glass and the polycarbonate panel. For best results, the optimum air gap is between 50 and 100 millimetres. With the aid of our magnetic system, the large sealed air gap acts as a baffle. In this some of the sound making its way through the first pane dissipates after bouncing off the second pane. This reduces the amount of sound vibrating through the window.

Why polycarbonate secondary glazing can be a better solution than double glazing?

Glass is a rigid, inelastic material, which means that it is very good at conducting sound. As such standard double glazing alone will do little to improve noise reduction. Moreover, if your double glazing features two panes of glass with the same thickness, this can cause sounds to resonate and actually amplifies the noise.

Solid polycarbonate as a glazing panel is more flexible than glass and of a different thickness; therefore sound resonance is not the same issue. Finally, while our glazing is a very efficient way of soundproofing your home, it is also the most affordable. It can be up to 85% cheaper than double glazing.