

the sash window man



Factsheet - What is Noise?

Noise is, very simply, unwanted sound. Noise intrusion into the home is a cause of constant frustration for many people, particularly those who live near railway lines, under flight paths, or on busy roads. Not only is noise irritating and stressful but studies have shown that it can also have a detrimental effect on your health and happiness.



“Noise can have a detrimental effect on your health and happiness.”

Windows tend to be the weakest point of sound insulation in the home. This is because, unlike walls and ceilings which block and absorb sound energy, windows allow sound vibrations to pass through and enter the home.

Sound is carried to the ear through vibrations in the air. When the glass in your windows vibrates it allows sound waves from outside to travel through the glass and enter the room. Many people believe simply increasing the thickness of the glass will significantly improve the noise insulation. Although this does help to reduce low frequency noise (e.g. Truck engine noise, trains), the most common and invasive noises in the environment tend to be high frequency sounds (e.g. road traffic, seagulls, people). Frequency is used to describe the speed at which a sound wave travels; the average human ear can detect frequencies between 20-20,000 Hertz.

Did you know?

Due to a phenomenon known as the Coincidence Dip high frequency sounds cannot be reduced by simply increasing the thickness of the glass. The Coincidence Dip occurs when a sound wave travels through the glass during a wave bend. During this bend, if the frequency of the sound wave hitting the glass matches the critical frequency at which the glass vibrates, the sound becomes easier to detect, almost as if there were a hole



"A reduction of 10dB has the effect of halving the loudness of the sound."

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in the glass which appears just for this particular sound frequency.

Increasing the thickness of the glass will lower the frequency at which the coincidence dip occurs but will not reduce the loudness of the sound at that frequency. Acoustically Laminated Glass effectively dampens high-frequency sounds by changing the wave pattern of the sound energy and preventing the occurrence of the Coincidence Dip.

How Is Noise Measured?

The loudness of a sound is generally measured in Decibels (dB). For humans a comfortable noise level is around 35dB during the day and 30 dB at night, although the human ear can detect sounds between 0-130dB. It is generally agreed that a reduction of 5dB will result in a clearly noticeable difference and a decrease of 10dB will have the effect of halving the perceived intensity of the sound.

SOUND	NOISE LEVEL (dBA)	EFFECT
Normal Breathing	10	
Rustling Leaves	20	Just audible
Whisper	30	Very quiet
Refrigerator Humming	40	
Quiet Office	50-60	Comfortable (under 60 dB)
Normal Conversation	50-65	
Vacuum Cleaner	70	Intrusive; interferes with telephone conversation
Hair Dryer	70	Intrusive; interferes with telephone conversation
TV	75	
Dishwasher	75	
Washing Machine	78	
Average City Traffic Noise	80	Annoying; interferes with conversation; constant exposure may cause damage
Diesel Truck	84	
Lawnmower	85-90	Level at which hearing damage (8 hrs.) begins (85dB)
Motorcycle	88	Very annoying
Refuse Truck	100	No more than 15 minutes of unprotected exposure recommended (90-100 dB)
Symphony Orchestra	110	Regular exposure of more than 1 minute risks permanent hearing loss (over 100 dB)
Power Saw (Chain Saw)	110	Regular exposure of more than 1 minute risks permanent hearing loss (over 100 dB)
Stereo (Over 100 Watts)	110-125	
Rock Concert (Varies)	110-140	Threshold of pain (125dB)
Disco	120	Threshold of sensation (120 dB)
Thunderclap (Near)	120	
Shotgun Firing	130	
Jet Engines (Near)	140	



"SoundBlocker windows can reduce noise by up to 75%."

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How can I reduce the amount of noise that comes through my windows?

Draft proof your existing windows

This will prevent unnecessary noise entering your home.

Perimeter Sealing

Some people find that simply sealing around the edges of the windows will significantly reduce the amount of noise intrusion into their home.

Replace existing windows with Acoustic Laminated Glass

Reduces high frequency sounds by absorbing the sound energy and preventing the occurrence of the Coincidence Dip.

Increasing Air gap

Research suggests that doubling the air gap between panes of glass in a double glazed unit can increase sound insulation by up to 3dB. However, due to the increased size and weight of the window, the additional cost and hassle involved, often far outweigh any beneficial gains in sound insulation. If you currently have double glazing and wish to further improve noise insulation, Secondary Glazing would be a far more appropriate and cost effective solution.

SoundBlocker Window Secondary Glazing System

Reduces both high and low frequency noise; improving sound insulation by up to 15dB (75%).

The SoundBlocker window is made from Perspex, specifically chosen because it vibrates at a different frequency to glass. This means the SoundBlocker window overcomes the issue of the Coincidence Dip.

Upgrade single glazed windows to Double Glazed Windows

Double glazed windows weaken sound by increasing the distance the sound wave has to travel. The second pane of glass blocks and absorbs some of the sound that escapes through the first pane.

Incorporate Acoustic Laminated Glass to best insulate against both high and low frequency noise.

Incorporate Glass of Different Thicknesses

Using glass of differing thickness in double glazed windows will help to eliminate the occurrence of the Coincidence Dip. This is because the critical frequency will change depending on the thickness of the glass. Therefore the sound frequency that is able to escape through the first pane of glass due to the Coincidence Dip will not be of the right frequency to escape through the second, thicker pane of glass. Combining this method with Acoustically Laminated Glass would significantly improve the sound insulation of your windows against these invasive high frequency noises.

Super Spacer®

Spacer bars are used to seal the airspace and separate the panes of glass in a double glazed unit. The majority of double glazed units are manufactured with metal spacer bars as standard. The Super Spacer® is made of specially engineered foam that can increase sound insulation by up to 2dB and improve the energy efficiency of your windows by up to 10%.