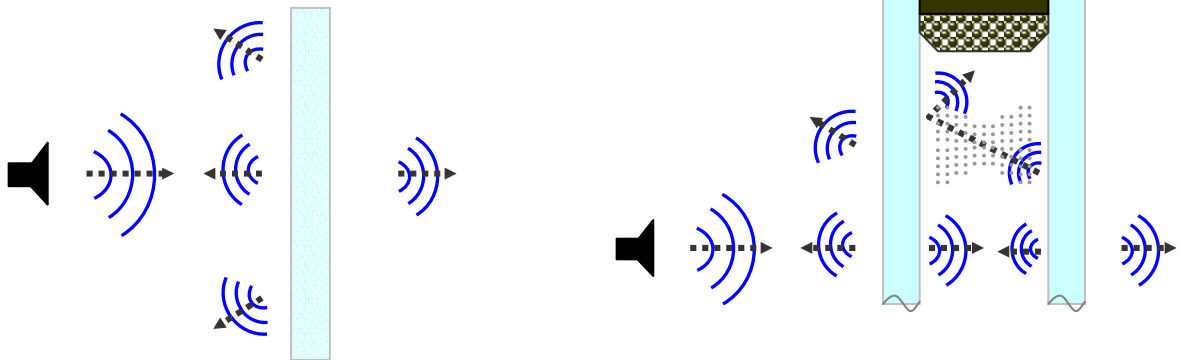


Sound Insulation Theory

Sound is the propagation of mechanical energy through vibrations in the air. When these vibrations hit upon a surface, they are either transmitted, reflected or absorbed (& dissipated in form of heat).

Noise Insulation by Reflection: Monolithic glass and insulated glass units (without gas) work mainly on the principle of sound reflection. In this case sound energy is not converted into a different energy form, but its direction of propagation is changed.



Monolithic Glass: Sound is primarily reflected

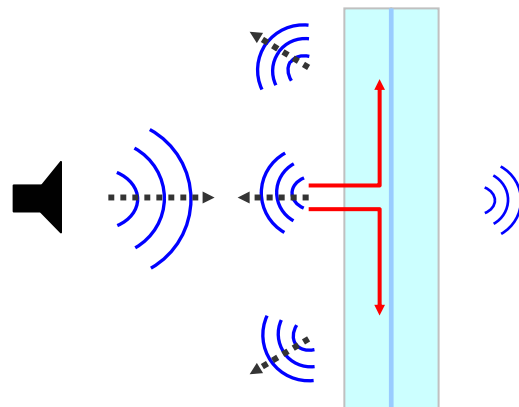
Insulated Glass Units: Sound reflections within the IGU create reverberations reducing the sound insulation effect of using 2 panes. For IGUs to be effective air-gap should be > 50mm, or filled with an acoustic dampening gas like SF₆

Noise Insulation by Absorption:

In this case the material absorbs the sound energy and dissipates in form of heat.

Dual Action of AIS Acousticglas™

The first pane of AIS Acousticglas™ performs the role of mainly reflecting the sound waves. Sound energy that gets transmitted through the first pane, is then further absorbed by the interlayers and dissipated in form of heat. This dual action, results in significantly better acoustic insulation compared to both monolithic glass as well as most insulated glass units



AIS Acousticglas™: Sound is first reflected. Majority of transmitted sound through first glass pane is then absorbed by the special interlayers and dissipated in form of **heat**

Performance data

	5mm Ordinary Glass	Insulated Glass Units (4-12-4 IGU)	AIS Acousticglas™ (44.2 Special Laminate)
Outside noise (db)¹ (logarithmic scale)	80 dB	80 dB	80 dB
Sound Transmission loss (STL)² (logarithmic scale)	27.5 db	29.0 dB	35.7 dB
Inside Noise (Actual sound pressure -Pascal)	8.5×10^{-3} Pa	6.6×10^{-3} Pa	3.2×10^{-3} Pa
% Reduction (compared to 5mm ordinary glass)	reference	~22%	~62%

¹ Outside noise assumed to be normal traffic noise, typically between 75-80 dB in India

² Sound Transmission loss for various glasses calculated under test conditions with no internal sounds

**Sound insulation
at various Frequencies**

