

Human Perception of Sound

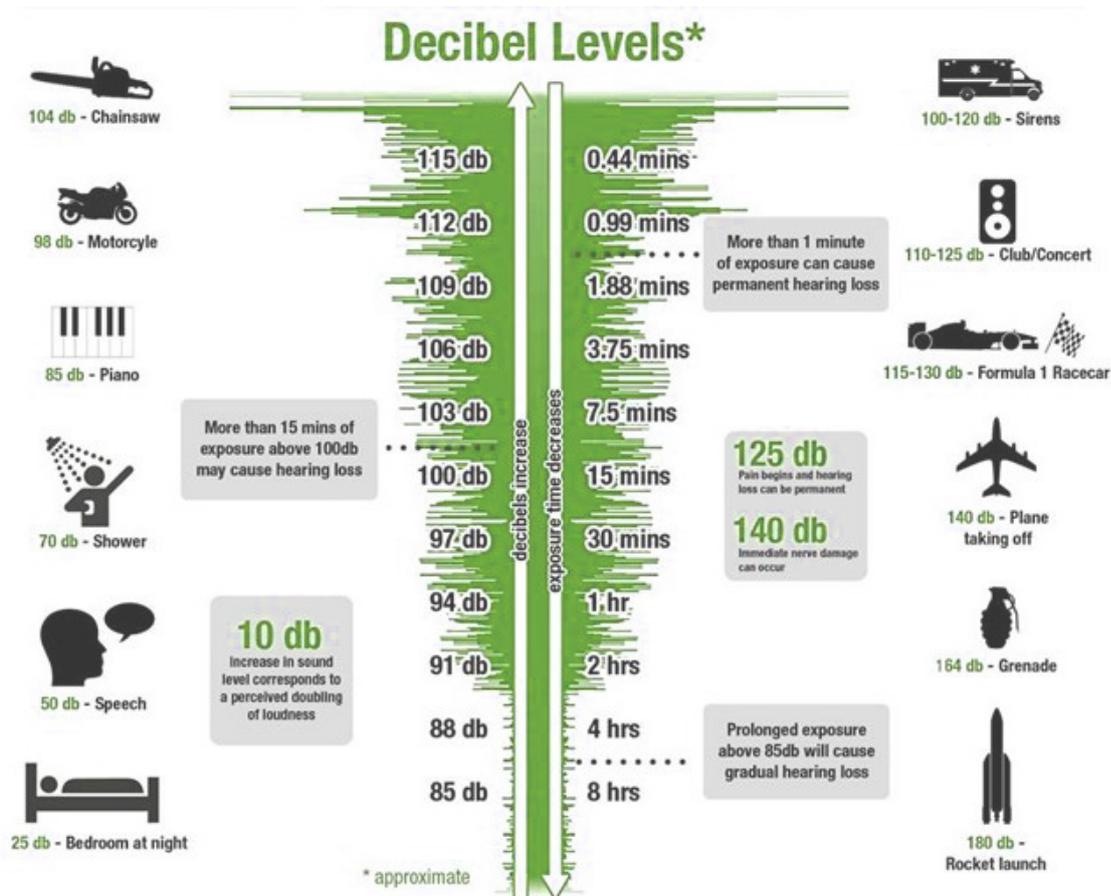
The threshold of perception of the human ear is approximately three decibels, and a five-decibel change is considered to be clearly noticeable to the ear. This is primarily due to the logarithmic measuring metric typically associated with decibels. On the decibel scale, the smallest audible sound (near total silence) is 0 db. A sound 10 times more powerful is 10 db. A sound 100 times more powerful than near total silence is 20 db. A sound 1,000 times more powerful than near total silence is 30 db. When a sound increases by 10 decibels, the subjective response is a doubling of loudness e.g. 60 decibels to 70 decibels = twice as loud

Perceived changes in loudness:

- + 1 dB - unnoticeable
- + 3 dB - barely perceptible
- + 5 dB - quite noticeable
- +10 dB - sounds twice as loud
- +20 dB - sounds four times as loud

Many different properties affect the noise level of a specific source type. For example, three lawn mowers may have three different noise levels because of differences in each specific piece of equipment. Noise level also depends on the distance from the noise source and the attenuation of the surrounding environment. See a 'real world' lawn mower test at this link. This was performed using a typical Victor lawnmower with a 1.8 metre SlimWall™ as the boundary fence.

<https://www.youtube.com/watch?v=L4mry4pX-NI>
OR google - SlimWall™ Lawn Mower Test



Understanding Sound

DESCRIBING NOISE

Sound waves are pressure changes in air, created from sound sources which emit vibrations detectable by the ear. Different sources emit vibrations at different rates, termed 'frequency'. The measure of frequency is given in terms of cycles per second, termed Hertz or 'Hz'. Low ('bass') sounds have a low frequency and high ('treble') sounds have a high frequency.

Noise levels, often termed 'sound pressure level' or 'SPL' are described in 'decibels' with the shorthand being 'dB'. Human hearing is not equally sensitive to all frequencies and as such, noise levels are 'weighted' to describe what humans hear. The common weighting is the 'A' weighing scale; with resultant sound pressure levels be described in 'dB(A)'.

Noise can be described as unwanted sound sources, many of which are part of our everyday lives. Example sources are road traffic, industrial facilities, and aircraft. Typical noise sources controlled by Modular Wall barrier products are road traffic, industry and commerce and general neighbourhood noise between residential premises.

Unwanted noise can adversely affect amenity, and in extreme cases, health and well-being. Consequently, local authorities and government often impose criteria (noise limits) to control the level of noise sources such as roads and industry received by residential premises.

In some cases, these limits may not meet quality objectives for a particular land use or residence and in such cases lower noise levels are appropriate. Modular Wall Systems™ is able to provide solutions to address local authority requirements and the quality objectives of individuals. In some cases, barriers are just one part of a total noise control solution with advice from an acoustic engineer.

In order to understand changes in noise level, the table below presents common subjective response to increasing levels of noise reduction.

Change in noise level (dB)	Subjective Rating	Subjective Response
0	No reduction	No change
1 – 3	Slight reduction	Perceivable difference
3 – 5	Moderate reduction	Noticeable difference
5 – 10	Good reduction	Up to a halving in loudness
10 and more	Extensive reduction	More than a halving in loudness