


Acoustic Terminology

Acoustic barrier	Solid walls or partitions, solid fences, earth mounds, earth berms, buildings, etc used to reduce noise, without eliminating it.
Air-borne noise	This refers to noise which is fundamentally transmitted by way of the air and can be attenuated by the use of barriers and walls placed physically between the noise and the receiver.
Ambient sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated.
Audible range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20Hz to 20kHz, although it is possible for some people to detect frequencies outside these limits.
Background noise	Background noise is the term used to describe the noise measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L_{90} noise level (see below).
Barrier	See "Acoustic barrier", a solid object used to attenuate sound.
Character, acoustic	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.

Decibel [dB]	<p>The level of noise is measured objectively using a Sound Level Meter. This instrument has been specifically developed to mimic the operation of the human ear. The human ear responds to minute pressure variations in the air. These pressure variations can be likened to the ripples on the surface of water but of course cannot be seen. The pressure variations in the air cause the eardrum to vibrate and this is heard as sound in the brain. The stronger the pressure variations, the louder the sound is heard.</p> <p>The range of pressure variations associated with everyday living may span over a range of a million to one. On the top range, may be the sound of a jet engine and on the bottom of the range may be the sound of a pin dropping.</p> <p>Instead of expressing pressure in units ranging from a million to one, it is found convenient to condense this range to a scale 0 to 120 and give it the units of decibels. The following are examples of the decibel readings of every day sounds;</p> <ul style="list-style-type: none"> • 0dB the faintest sound we can hear • 30dB a quiet library or in a quiet location in the country • 45dB typical office space. Ambience in the city at night • 60dB Martin Place at lunch time • 70dB the sound of a car passing on the street • 80dB loud music played at home • 90dB the sound of a truck passing on the street • 100dB the sound of a rock band • 115dB limit of sound permitted in industry • 120dB deafening
dB(A): A-weighted decibels	<p>The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.</p>
Diffraction	<p>The distortion around solid obstacles of waves travelling past.</p>
Fluctuating noise	<p>Noise that varies continuously and to an appreciable extent over the period of observation. It can also include intermittent noise. As a guide, when the level varies noticeably by more than 5 dB over a period of less than one minute, the noise is considered to be fluctuating.</p>
Frequency	<p>Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.</p>
Heavy vehicle	<p>Heavy vehicles are assumed to be buses, rigid trucks and semi trailer trucks with a tare weight greater than 3 tonnes. Also heavy vehicles can be defined in terms of length as buses, or trucks with a length exceeding 5.25 metres.</p>
Impulsive noise	<p>Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.</p>

Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
Lnn noise descriptors	Because noise varies with time, a single noise value cannot adequately define the noise ambient. For this reason, the acoustic environment is described using a number of noise level descriptors as follows;
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L10(1hr)	The L10 level measured over a 1 hour period.
L10(18hr)	The arithmetic average of the L10(1hr) levels for the 18 hour period between 6am and 12 midnight on a normal working day. It was a common traffic noise descriptor. For traffic noise it is usually about 3dB(A) higher than Leq (24 hours).
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
Leq	Equivalent sound pressure level - the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
Leq(1hr)	The Leq noise level for a specific one-hour period.
Leq(8hr)	The continuous noise level during any one hour period between 10pm and 6am.
Leq(9hr)	The Leq noise level for the period 10pm to 7am.
Leq(15hr)	The Leq noise level for the period 7am to 10pm.
Leq (24hr)	The equivalent continuous noise level during a 24 hour period, usually from midnight to midnight.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on. That is, the sound of 85 dB is 400% times the loudness of a sound of 65 dB.
Low-frequency noise	Containing major components within the low frequency range (20Hz - 250Hz) of the frequency spectrum.
Microphone	An electro acoustic transducer which receives an acoustic signal and delivers a corresponding electric signal.
Nature, acoustic	The innate or essential quality of the noise. That which makes one noise distinguishable from another (e.g. the spoken voice from the sound of a dog barking, a telephone ringing from the sound of a gun).
Noise	Sound which a listener does not wish to hear.
Noise monitor	See "sound level meter".
Quality, acoustic	An attribute, characteristic or property of the noise, its duration, its time-varying characteristics or its frequency content. Examples are the "screech" of screaming, the "rumble" of an air conditioner, the "dripping" of a tap.

Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
STC	Sound Transmission Class. This is a measure of the extent of sound reduction of noise going through a building element, presented as a rating or class. It denotes the sound attenuation properties of walls, floors and ceilings used to construct building spaces. The higher the STC the better the sound reducing performance of the construction.
Structure-borne noise	<p>This refers to noise which is generated by vibrations induced in the ground and/or structure. These vibrations excite walls and slabs in buildings and cause them to radiate noise. This type of noise can not be attenuated by barriers or walls but requires the interposition of a resilient (neoprene, springs etc.) break between the source and the receiver.</p> <p> click here to download Schematic Representation of Airborne and Structure borne Noise Transmission (151kb).</p>
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.