

A BRIEF GUIDE TO TERMS USED IN NOISE CONTROL

DECIBELS	Decibels are the basic unit of measure of sound levels. Because of the large range of sound
(dB)	energy that people can hear and because the response of the ear is more logarithmic than
	linear, decibels use a logarithmic scale to represent either sound pressure levels or sound
	power levels. This is why 50 dB + 50 dB does actually equal 53 dB, and <u>not</u> 100 dB.
dBA	dBA denotes an A-weighted sound level. The ear has differing sensitivities to different frequencies of sound and the A-weighting scale was developed to correspond to the relative
	frequency response of the human ear. The ear is relatively insensitive to low frequency
	sounds compared to mid- and high frequencies as is reflected in the A-weighting corrections
	shown below. The A-weighted sound level has proven to be a good indicator of community
	annoyance to noise and is therefore often used in design criteria and community noise
	standards.
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Leq	L_{eq} is the energy equivalent sound level. It is the sound level of a steady-state sound that
	has the same ("equivalent") total energy as the time-varying sound measured over a specific
	time period. L_{eq} is a single-valued level that expresses the time-averaged total energy of a varying or fluctuating sound level and is an A weighted level
	varying of fuctuating sound level and is an A-weighted level.
L _{dn}	L_{dn} is the day-night equivalent sound level, calculated using the following equation.
	$L_{dn} = 10 \log 1/24 \left[15 \ge 10^{(L_d/10)} + 9 \ge 10^{((L_n+10)/10)} \right]$
	L_d is the L_{eq} for the 15 daytime hours between 7 AM and 10 PM and L_n is the L_{eq} for the 9
	nighttime hours between 10 PM and 7 AM. This equation adds 10 dB to the nighttime L_{eq}
	to account for the fact that noise is typically quieter during nighttime hours. Most federal
	agencies including the Environmental Protection Agency, Housing and Urban Development and Federal Pegulatory Commission use the Lymposure for their criterie
	Development, and rederal Regulatory Commission, use the L_{dn} measure for their criteria.
PWL	PWL or L _w stands for sound power level. The sound power is the total sound energy
	radiated by a noise source.
SPL	SPL or L _P stands for sound pressure level. Sound pressure is what the ear or a microphone
51 E	responds to, and the sound pressure level is a measure of the intensity of the sound pressure
	at a given point. The sound pressure level from any source depends on the position relative
	to the source, so sound pressure level data for a piece of equipment requires a distance and
	sometimes a direction from the source to be meaningful.
OCTAVE	Sound levels are normally reported in 9 octave bands which cover the audible frequency
BAND	range for humans, about 20 Hz to 16,000 Hz. The standard octave bands are denoted by the
	center frequency in each band ranging from 31.5 to 8000 Hz. Octave band sound level data
	18 very important for source identification or if noise control treatment must be designed.