

Midland Metro

E1.4 Glossary of Acoustic Terms

Decibels

Noise levels are measured using the decibel scale. This is not an additive system of units (as for example, metres or kilograms are) but a proportional system (a logarithmic progression). A change of 10 dB corresponds to a doubling of loudness; changes of less than 3 dB are not normally regarded as noticeable.

A-weighting

Environmental noise measurements and levels are usually expressed using a variation of the decibel scale, which gives less weight to low frequencies and very high frequencies. This system was derived to correspond to the reduced sensitivity of the hearing mechanism to these frequencies when noise levels are low (ie relatively quite). It is now used regardless of the intensity of the noise.

Average Noise Level – L_{Aeq} (Equivalent Continuous Noise Level)

In order to use a single figure to describe varying noise levels, the average noise level can be used – the L_{Aeq} . Note that because of the logarithmic scale, the way in which the averaging is carried out is not the same as for normal numbers. When this average is used, the time over which the average is determined must be stated. This average is also known as the equivalent continuous noise level. This is the steady noise level that would result in the same noise energy at the receiver as occurred in practice with a varying level.

Background Noise Level - L_{A90}

Background noise level is a measure of the low level of noise that occurs between the higher levels from particular events, for example passing vehicles. This may be abbreviated to BNL and the symbol is L_{A90} . It is the value exceeded for 90% of the time period being considered. Note that it is higher than the minimum noise level but may be regarded as the typical noise level during 'quiet periods'.

Maximum Noise Levels

The L_{Amax} is the highest value of the sound level over the specified period. It is sometimes referred to as 'peak' noise level. However, the term 'peak' has a special meaning in acoustics and the expression 'maximum' is preferable to avoid confusion.

(1) Planning and Noise, DoE 1994.

(2) British Standard BS 5228 Noise control on construction and open sites, BS 1997.

(3) Advisory Leaflet 72 (1976) Noise control on building sites, DoE.

(4) The sound reduction of a closed single glazed window is generally taken to be at least 25 dB(A) compared to an open window in a conventionally constructed building which can be assumed to be 10 - 15 dB/A.

(5) The document also suggests that the number, magnitude, and frequency of occurrence of maximum noise levels is an important consideration. A guideline level equivalent to 60 dB L_{Amax} at the facade is suggested though this depends on the other parameters

(6) Defined in *Section 72* of the Control of Pollution Act 1974.

(7) CIRIA (1992) Ground-borne vibrations arising from piling

(8) Planning Policy Guidance 24 Planning and Noise, 1994, DoE