

Methods for Estimating the Adequacy of Hearing Protector

The most convenient method to determine the adequacy of the hearing protection is the Noise Reduction Rating (NRR) developed by the Environmental Protection Agency (EPA). According to EPA regulation, the NRR must be shown on the hearing protector package. The NRR is then related to an individual worker's noise environment in order to assess the adequacy of the attenuation of a given hearing protector.

When using a sound level meter set to the A-weighting network:

- 1 Obtain the employee's A-weighted TWA
- 2 Subtract 7 dB from the NRR
- 3 Subtract the remainder from the A-weighted TWA
- 4 Gives you the estimated A-weighted TWA under the ear protection

Example:

TWA=97 dBA, plugs NRR = 34 dB

Estimated Exposure = 97 - (34-7) = 80 dBA

Hearing protector attenuation must be sufficient to reduce employee exposure to a TWA of 85 dBA or below.

Keep in mind

The above formula can be used to evaluate the hearing protection for standard compliance; but OSHA strongly recommends applying a 50% correction factor when estimating field attenuation. This is especially important when considering whether engineering controls are to be implemented. The equations above would then be modified as follows:

Single Protection

Estimated Exposure (dBA) = TWA (dBA) - [(NRR - 7) x 50%]

Estimated Exposure (dBA) = 97 (dBA) - [(34 - 7) x 50%] = 83.5

Reference

Cal OSHA Title 8 Section 5097 appendix
D Federal OSHA 1910.95 (J) (1) appendix
BResources

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