



Earplug ratings and how they are calculated

SNR [Single Number Rating] – is number rating used by countries within the European Union and affiliated countries calculated from Assumed Protection Values according to a method given in Annex D of BS EN ISO 4869-2:1995 "Acoustics - Hearing protectors - Part 2: Estimation of effective A-weighted sound pressure levels when hearing protectors are worn". Tests are conducted at independent testing laboratories, using frequencies which are slightly different than those used for the NRR rating. In addition to an overall rating, the SNR further rates protectors in terms of the particular noise environments in which they will be used – H for high-frequency noise environments, M for mid-frequency and L for low-frequency. Note that the HML designation does not refer to noise level, rather the spectrum of the noise. For example, a protector might be designated with SNR 26, H=32, M=23, L=14. The estimated attenuation changes according to the noise spectrum of the environment in which the protector is to be worn. The SNR rating is the result of a lengthy mathematical calculation – it gives us a single-number rating of a hearing protector's attenuation for a specified percentage of the population. The SNR is significantly lower than the average attenuation across all of its test frequencies as the calculation contains correction factors to make it applicable to the broader population. While it is not the perfect real-world measure of attenuation, SNR is a very useful standardized method for describing a hearing protector's attenuation in a single number. For instant if an environment has an a weighted noise measurement of 100dbA then by using an earplug with an SNR rating of 25db it will reduce the noise to 75db, the precautionary action level is 80dbA, where hearing protection has to be offered and audiometric testing training programs implemented.

NRR [Noise Reduction Rating] – rating is used in the United States, and is accepted for use in a number of other countries. The NRR is an estimate of the amount of protection achievable by 98% of users in a laboratory setting when hearing protectors are properly fitted. The current range of NRR levels available in the U.S. market extends from 0 to 33 decibels. Published by the U.S. Environmental Protection Agency in 1979, the NRR labeling requirement is a standardized format for all hearing protection products distributed in the U.S. The chart showing mean attenuation values and standard deviations at each of the seven test frequencies (from 125 Hz through 8000 Hz).