



Conflicting Information About How to Use the NRR

Do you know how to use the NRR values that are required on the packaging of all hearing protection devices sold in the United States? If you do, you are one of a kind!

EPA The only law (passed by the U.S. Congress) regulating how to use the NRR, is actually the EPA labeling regulation, dating back to 1981. This law directs the user to deduct the NRR from the noise level at hand, in order to get the noise level at the ear. That is pretty straightforward: Noise level [98 dB] minus Hearing Protector NRR [25 dB] = Noise at the Ear, 73 dB.

OSHA Although OSHA® has no legislative authority, the agency has in its field manual directed their inspectors to use the following formula for how to apply the NRR.

If noise measurements are made with the dB(A) scale, the following formula applies. (Noise level [98 dB] minus NRR divided by 2 [25 dB minus 7 dB divided by 2] = Noise level at ear, 89dB)

If the noise level measurements are made with the dB(C) scale, this formula applies. (Noise level [98 dB] minus NRR divided by two [25 dB divided by 2] = Noise level at ear, 85.5 dB)

Although OSHA® has only enforcement authority, their interpretation has held up in court. OSHA® only recommends that the 50% safety factor is applied. Realize that if a company runs an effective hearing conservation program, they are not likely to be challenged. An effective hearing conservation program can be defined as a program that assures that no new permanent and noise induced hearing losses occur among its employees.

OSHA® Web Site, January 1999:

OSHA® recommends that manufacturers include a secondary label for NRR-SF. The SF (Subject Fit) refers to a NRR value achieved with the new ANSI S12.6-1997, using naïve subjects. Naïve subjects are defined as individuals having no previous experience in the use of hearing protection. The naïve subjects are part of the ANSI standard, why OSHA® bears no blame for this situation.

NIOSH Criteria for a Recommended Standard, Occupational Noise Exposure, June 1999: NIOSH recommends that Subject Fit data in accordance with ANSI S12.6-1997 be used. (To our knowledge no U.S. manufacturer has made "Subject fit" test data available). NIOSH recommends the following de-rating of hearing protector NRR's, if subject fit data is not available.

Earmuffs, Subtract 25% from the manufacturer's labeled NRR

Formable earplugs, Subtract 50% from the manufacturer's labeled NRR

All other earplugs, Subtract 70% from the manufacturer's labeled NRR

The above de-ratings apply only when the noise measurement was made with a dB(C) scale. When only a dB(A) scale measurement is available, the de-rated NRR's should be reduced by seven dB. Observe that earmuffs require the lowest de-rating.

***LAST comment:** The method assures lower NRR's, but we are no longer testing hearing protectors, we are testing test subjects. Better products will not necessarily get higher NRR's. How about testing the safety record of new cars by having drivers without license drive a test course, and the car without dents gets the highest rating)*

