

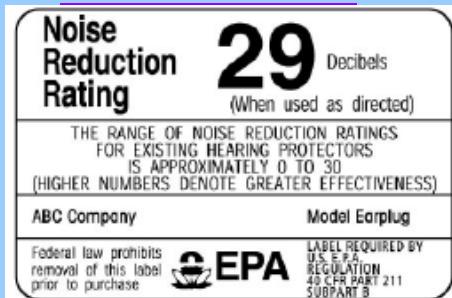


Noise Reduction Ratings (NRR)

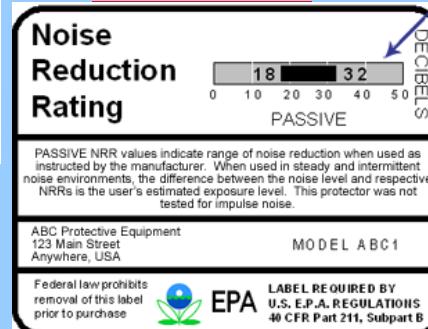
What is NRR?

NRR describes the average sound level reduction that hearing protection devices (HPD) provide. These ratings are determined in laboratories in control conditions. However, the laboratories are nothing like the real world and do not account for various variables. All HPDs are sold with a NRR. You should know how to select the best HPD that provides the best protection for any noise exposure.

Current Label



New Label



According to OSHA standard 1910.95 App B, NRR must be adjusted to reflect:

- “Real World” performance (de-rating)
- Conversion of noise from low frequency sound (C-weighted sound) to frequencies that transmits environmental sounds (A-weighted sound)

In the meantime...

How do you make the adjustment for the current NRR label?



Why is the NRR changing?

It will provide a more accurate guide of how hearing protection performance varies for each individual.

The new label is based on recent ANSI S12.68-2007 standard

- Does not require the conversion from C-weighted to A-weighted sound levels
- Accounts for wide range of users (highly trained users of HPD vs. inexperienced users of HPD)
- Research is pending to determine if de-rating is necessary (real world performance)

Example: You are operating a band saw that is producing 100 dBA noise. Your ear plugs have a **NRR of 33**.

To convert the NRR from C-weighted sound level to A-weighted sound level: Subtract 7dB from NRR.
33dBC—7dB = 26 dBA

To reflect the “real world” (de-rating) performance, divide the NRR by 2.
26 dBA / 2 = 13 dBA

Your 8 hour noise exposure would then be:

$$100 \text{ dBA} - 13 \text{ dBA} = 87 \text{ dBA}$$

In this case, you would want to wear another HPD (ear muffs) so you do not exceed the OSHA Action Level 85 dBA. You would then add 5 dBA to the NRR. Adding 5 dBA is a constant established by NIOSH research.

$$\begin{aligned} 13 \text{ dBA} + 5 \text{ dBA} &= 18 \text{ dBA} \\ 100 \text{ dBA} - 18 \text{ dBA} &= 82 \text{ dBA} \end{aligned}$$

You are now wearing sufficient protection!

Source: “The Naked Truth About NRRs” EARlog

“3M Education: How to Use the Noise Reduction Rating” 3M Corporation

“NRRUpdate” 3M, EARlog, Peltor

IH. C. Elish 9/22/10

