

# Hearing Protection

It is critical to use adequate hearing protection to avoid long lasting damage

## NRR (Noise Reduction Rating)

Understanding hearing protection ratings and the effectiveness of hearing protection devices to decrease sound exposure.

OSHA advises that actual decibel reduction for NRR ratings should be estimated in the following manner.

As an example, the level of noise exposure for sandblasting is approximately 115 dB. Wearing earplugs with an NRR 33 dB does not reduce the level of noise exposure to 82 dB.

To determine the actual amount of decibel reduction, subtract seven from the stated NRR and then divide the result by two. Wearing NRR 33 dB earplugs during sandblasting may reduce the level of noise exposure from 115 dB to 102 dB.

Combining hearing protection devices, such as earplugs and earmuffs adds five additional decibels of protection to the device with the higher NRR. For example, combining NRR 33 dB earplugs and NRR 27 dB earmuffs may reduce the level of noise exposure by a total of 38 dB.

Beginning Sound Level

**115 dB**

add NRR 33 dB earplugs  
-7 dB  
with 50% Reduction

**- 13 dB**

Sound Level with Earplugs

**102 dB**

Additional Protection  
add NRR 27 dB earmuffs

**- 5 dB**

Ending Sound Level

**97 dB**

NOISE  
THRESHOLD

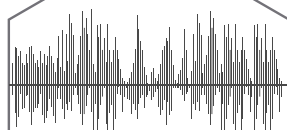
**0 dB**

NORMAL  
CONVERSATION

**60 dB**

ALARM  
CLOCK

**80 dB**



Limit exposure to 90 dB  
to 2 hours or less.

SAND  
BLASTING

**115 dB**

JET  
ENGINE

**120 dB**

TRUCK  
TRAFFIC

**90 dB**

POWER  
SAW

**110 dB**

HEARING  
LOSS

At 115 dB and above,  
hearing loss can  
occur within one minute  
of exposure.

JACK  
HAMMER

**130 dB**

LOUDEST  
RECOMMENDED  
EXPOSURE  
WITH PROTECTION

**140 dB**

OSHA requires employers to implement a hearing conservation program when noise exposure is at or above 85 decibels averaged over 8 working hours. If you need to raise your voice to speak to someone 3 feet away, noise levels might be over 85 decibels.

