What Makes Musicians Earplugs High Fidelity?

Musicians Earplugs® replicate the natural response of the ear canal so that sound heard with these earplugs has the same quality as the original, just quieter.

In Earplugs, attenuation (sound reduction) of sound energy in the ear canal can vary widely. ER-9, ER-15, and ER-25 feature attenuation levels as follows:

- **ER-9** (9 dB)
- **ER-15** (15 dB)
- **ER-25** (25 dB)

Recommended Earplugs for Musicians

Musicians practice and perform in a variety of different settings and are exposed to high levels of sound, sometimes for long periods. They require different amounts of protection depending on the sound levels they encounter during rehearsals and performances.

Quick Reference Guide

![Quick Reference Guide Image]

Allowable Weekly Sound Exposure To Be Safe

<table>
<thead>
<tr>
<th>Noise Source</th>
<th>Hours</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Sports Event</td>
<td>88</td>
<td>120</td>
</tr>
<tr>
<td>Party with Band</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>Loud Bar with Band</td>
<td>70</td>
<td>120</td>
</tr>
<tr>
<td>Drumline Rehearsal</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>Old Chain Saw</td>
<td>50</td>
<td>120</td>
</tr>
<tr>
<td>Band</td>
<td>40</td>
<td>120</td>
</tr>
</tbody>
</table>

Hearing loss is a function of exposure time, the average noise level, and the peak level of very loud sounds.

Harmful Sound Comes From:

- Own instrument, other stringed instruments (e.g., bass, electric guitar)
- Wind instruments (e.g., woodwinds, brass)
- Percussion
- Vocalists
- Acoustic guitar
- Amplified instruments
- Marching bands
- Music teachers
- Recording engineers
- Sound crew

Button Colors:

- Blue
- Red
- Gray

Earplug Styles:

- Standard
- Totally insertional
- Custom

Insertion:

- Insert earplugs firmly and wear them by sliding the cord into the ear canal.

Cleaning:

- Remove earplugs from mold, use water and mild soap on the mold only.
- Dry mold thoroughly before replacing button.

Replacement:

- Discontinue use when cracking, hardening of earmold material, or deterioration in performance.

Musicians Earplugs® require custom earmolds. Deep impressions past the second bend of the ear canal must be taken to ensure the effectiveness of these earplugs and to reduce the inclusion effect.
Frequently Asked Questions:

Q: What’s wrong with conventional earplugs?

They muffle speech and music. Conventional earplugs reduce sound more in the high frequencies than in the low and mid frequencies; this makes music and voices sound unnatural and unbalanced. Deeply fitted foam earplugs can provide 30-40 dB of sound reduction, but only a small amount is typically needed.

Q: How much protection do people need?

Hearing loss is a function of exposure time, the average sound level, and the peak level of two-lead sounds. Some persons are more susceptible to hearing loss from high-level sounds than others. Most musicians do not need earmuff protection, and many noise-exposed workers can be adequately protected with as little as 20 dB of sound reduction. The majority of eight-ear-equivalent noise exposures in industry fall between 85 and 95 dB.

Q: Why are deep earmolds required for Musicians Earplugs?

Earmolds need to seal deeply in the bony portion of the ear canal or the wearer will hear a hollow or booming sound in their own ear when speaking, singing or playing a brass or wind instrument. This unpleasant or distracting sound is called the occlusion effect. Deep earmolds (past the second bend of the ear canal) will eliminate this problem.

Q: Is there a non-custom high fidelity earplug?

Yes, Thermo Research-established and patented ETV+Mugs, which are high fidelity ready-to-earplug that reduce sound evenly by 20 dB at all frequencies, so that music and speech are heard clearly.

Q: What does NRR mean?

The U.S. Environmental Protection Agency requires manufacturers to print an noise reduction rating (NRR) on all non-custom earplugs. The formula used to determine NRR includes an adjustment for test variability, individual variability, and for those persons who do not wear ear protection as instructed. Many investigators have found no consistent rank order correlation between the real-world attenuation and calculated NRRs. For example, the laboratory data on ETV+Mugs' ER-20 high fidelity Earplugs shows an average attenuation of 20 dB. In 30 measurements (3 measurements on each of 10 test subjects), no subject showed less than 16 dB or greater than 29 dB average attenuation over the 250-8000 Hz frequency range. The NRR rating was calculated from exactly these same data, plus the 12 dB value printed on ETV+Mugs.

What Musicians Say

From the Chicago Symphony Orchestra

Bill Buchanan (bass)

“I’m in front of the trumpets and trombones... The ER-15s let me hear myself playing and also the entire orchestra so I can correctly perceive my relation to the other instruments.”

Lawrence Neuman (mug)

“These earplugs don’t block out what I want to hear. They just tone it down and keep music equalized. I also wear mine on planes and the CTA, which is incredibly loud. I love them.”

Lee Lane (mug)

“I’d tried everything... When these came along, I was absolutely delighted: they’ve been very successful for me.”

Burl Lane (mug)

“ER-15s make this job fun again.”

Who uses Musicians Earplugs?

• Musicians
• Marching bands
• Sound crews
• Recording engineers
• Band teachers
• Concert goers
• DJs
• Athletic personnel
• NFL football players
• Interior designers
• Truck drivers
• Elders
• Construction workers
• Industrial workers
• Photographers
• Motorcycle riders
• Dentists
• Architects
• Nurses

For more information on high fidelity hearing protection visit: www.etrplus.com

Musicians Earplugs ER-9 ER-15 ER-25

For noise insensitive on high fidelity hearing protection visit: www.etrplus.com

• High fidelity custom hearing protection
• Sound quality is clear and natural, not muffled
• Noise fatigue is reduced