



SOUNDSOURCE™

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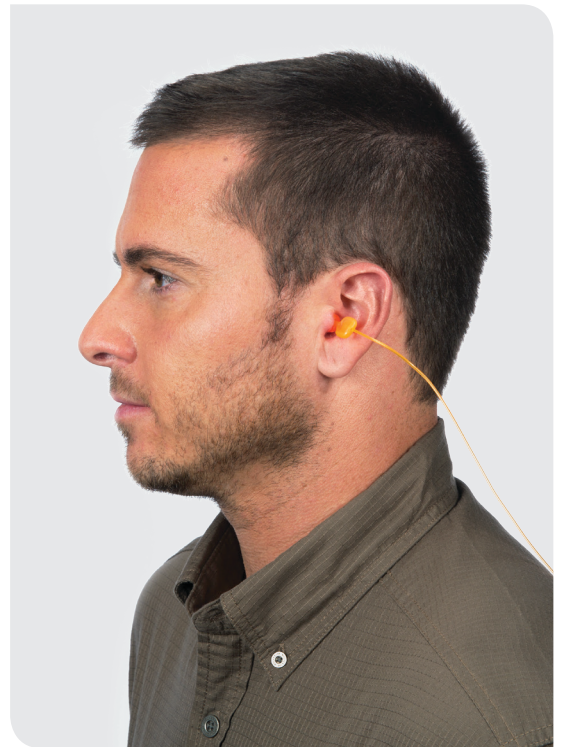


Earplug Selection Tips

How can I determine which earplugs are the best fit for my workers?

Imagine sending a friend to the store to purchase shoes for you, with the following instructions: "Any size, any shape, any style...doesn't really matter!" Many people approach selection of an earplug with the same cavalier attitude. The prevailing assumption is that "anything in my ear will protect my hearing—it doesn't really matter." In reality, ear canals come in different sizes and shapes, affecting both fit and protection levels, as well as comfort.

A worksite that offers only one size or style of earplug sabotages its own hearing conservation efforts. Why is variety so important? In one study of typical ear canal sizes across gender and populations, results showed that females typically have ear canals approximately 20% smaller than males, and those of Asian/African origins have significantly smaller ear canals than those of European origin as a population.¹ Beyond these population averages, there are also significant individual differences in ear canal size.



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One of the real benefits of offering a variety of hearing protection sizes and styles is the fact that it can generally be accomplished with little or no increase in cost. Whether a worksite offers 1,000 earplugs of one style, or 250 earplugs of four different styles, the cost would be quite similar. But the bigger variety will go far in providing a better fit for more ears, and protecting significantly more of the workers.

Fit-testing of hearing protection now allows a worker to try a variety of hearing protectors that may be suitable. Often, the worker's first choice of earplugs is not the best. But with dozens of different styles available, it can be difficult to decide which earplug would be a better choice for a given worker. What should a safety advisor try next when a worker achieves poor results with the first earplug? Here are some selection tips that have proven useful in one-on-one training.

Earplug Selection Tips

1. SIZE

Like a cork in a bottle, an earplug that is too large or too small will never achieve an acoustic seal. Have someone look into your ear canal opening to determine if a different size would be helpful. Yes, earplugs do come in different sizes, and there is no such thing as a "one-size-fits-all" earplug. What would be a recommended mix of sizes or styles to optimize the fit of earplugs at a worksite? Results from thousands of fit-tests conducted at several worksites shows that the following four earplug styles would be a good place to start:



• Large Foam Earplug: MAX® Large



• Smaller Foam Earplug MAX® Small



• Large Reusable Earplug: SmartFit® Large



• Smaller Reusable Earplug Fusion® Green Small

2. SHAPE

In addition to different diameters, ear canals come in different shapes too. While many ear canals are round (well fitted with a pre-moulded earplug), many have a distinct oval shape (or even a slit opening) best fitted with an expandable foam earplug. Ear canal openings may appear round, oval or as a slit. For oval or slit openings, a round reusable earplug will often not fill the ear canal—try a foam earplug.



3. EASE OF INSERTION

Some workers have difficulty rolling or inserting foam earplugs due to restricted dexterity or arthritis, or because they are wearing gloves. Try a no-roll foam or reusable earplug. An earplug with a stem may be easier for some workers to insert.

4. OTHER FACTORS

In addition to size, shape and ease of insertion, there are many other options available in earplugs that factor into proper selection:


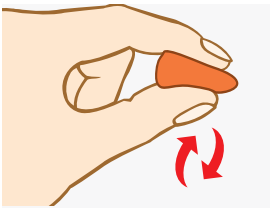
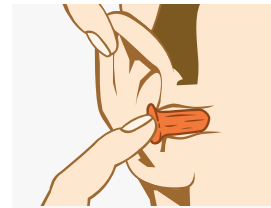
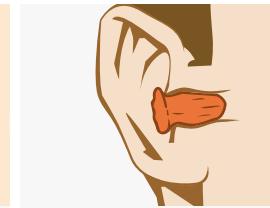

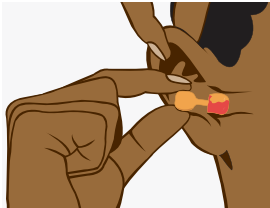
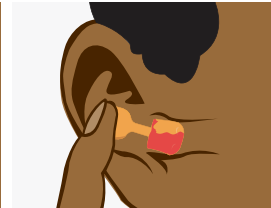
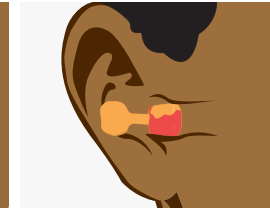

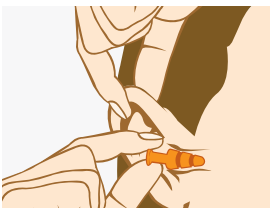
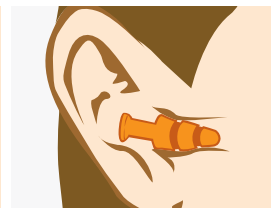
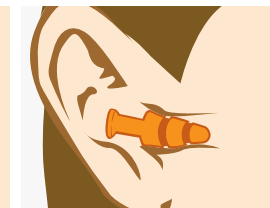
- Corded /uncorded
- Single-use or reusable
- Push-in foam
- Detectable earplugs (for food service industry)
- Uniform attenuation across frequencies (affecting speech clarity)

One significant feature of earplugs that is not a good selection factor is the published attenuation rating of an earplug (Noise Reduction Rating, or NRR): it can be quite deceptive in selecting proper protection. The NRR is a laboratory-based estimate of the amount of protection potentially achieved when the earplug is properly sized and properly fitted. Based upon the testing protocol behind the NRR, large foam earplugs have quite an advantage in generating higher ratings. But if a safety manager were to select earplugs based solely on a high NRR, the choice would be quite counterproductive. The safety manager would instead find many workers would never be able to achieve a good fit with that large earplug. If Large were the only choice of size, many workers would be forced to wear an earplug that would appear to be in the ear, but in reality could not be inserted far enough to come close to the NRR rating on the package. It would offer little protection from hazardous noise.

References:

1. Thomas, W., Wright, W., Casali, J. Ear Canal Measurement: Eargage versus ear impressions. Paper presented at the 19th Annual NHCA Conference, January 1994. Appears in Spectrum, 11(1), 34-35.

Earplug Fitting Instructions

<p>Disposable</p> <p>Roll-Down Foam MAX®</p> 	 <p>With clean hands, roll the entire earplug into narrowest possible crease-free cylinder.</p>	 <p>Reach over your head with a free hand, pull your ear up and back, and insert the earplug well inside your ear canal.</p>	 <p>Hold for 30 - 40 seconds, until the earplug fully expands in your ear canal. If properly fitted, the end of the earplugs should not be visible to someone looking at you from the front.</p>
<p>Reusable</p> <p>Push-In Foam Trust Fit™</p> 	 <p>While holding the stem, reach a hand over your head and gently pull the top of your ear up and back.</p>	 <p>Insert earplug so foam tip is well inside the ear canal. Use a gentle rocking motion while pushing earplug into ear canal to ensure a deep fit.</p>	 <p>If properly fitted, the tip of the earplug stem may be visible to someone looking at you from the front.</p>
<p>Reusable</p> <p>Pre-Molded Push-In SmartFit®</p> 	 <p>While holding the stem, reach a hand over your head and gently pull top of your ear up and back.</p>	 <p>Insert the earplug so all flanges are well inside your ear canal.</p>	 <p>If properly fitted, the tip of the earplug stem may be visible to someone looking at you from the front.</p>

Sound Source is a periodic publication of the Hearing Conservation team of Honeywell Safety Products USA, Inc., addressing questions and topics relating to hearing conservation and hearing protection.

WARNING: This document does not provide important product warnings and instructions. Honeywell recommends all users of its products undergo thorough training and that all warnings and instructions provided with the products be thoroughly read and understood prior to use. It is necessary to assess hazards in the work environment and to match the appropriate personal protective equipment to particular hazards that may exist. At a minimum, a complete and thorough hazard assessment must be conducted to properly identify the appropriate personal protective equipment to be used in a particular work environment. **FAILURE TO READ AND FOLLOW ALL PRODUCT WARNINGS AND INSTRUCTIONS AND TO PROPERLY PERFORM A HAZARD ASSESSMENT MAY RESULT IN SERIOUS PERSONAL INJURY.**

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