



From: Elliott H. Berger

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Re: Recommended hearing protectors for children, toddlers, infants, and newborns

This memo reviews smaller-sized hearing protection devices (HPDs) suitable for children (15 and under), as well as options for toddlers, infants, and newborns. For those latter categories there are no optimal choices, but suggestions are provided. Swim/water protection plugs are also discussed.

Young children and early teens (ages 5 – 15)

Noise Reduction

A good place to start is with 3M's small-sized version of the popular E•A•R™ UltraFit™ premolded earplug, sold in the consumer market as the 3M™ Tri-Flange™ Reusable Swimming Earplugs. Although no claims are made for this plug's noise reduction capabilities and it is not labeled with a Noise Reduction Rating (NRR), it does provide equivalent, though slightly less protection than 3M's standard UltraFit product. For additional information on the Swimming plug (Code 93080-00000), which is available at food and drug stores throughout the US .

E•A•R also manufactures the Classic™ Small (formerly Amigo), a smaller-diameter version of the excellent cylindrical Classic foam earplug, as well as the E-Z-Fit™, a small-size bell-shaped foam earplug. Neither product is specifically sold in the consumer market, but both are available through Safety Distributors, as product Codes 70-0715-1492-4 and 70-0715-1521-0 respectively. See http://solutions.3m.com/wps/portal/3M/en_US/Health/Safety/Products/Catalog/?PC_7_RJH9U5230GE3E02LES9MG812H2_nid=7P0Q6BZ6ZQbeQQFFG1G8R7qI . Foam plugs are an excellent choice for the majority of everyday noise sources. For optimal performance they must be inserted fully. See "Fitting tips" on the next page.

3M also makes two earmuffs that can fit children. Both have standard-size (adult) cups so they may be a little large around the ears on very small heads, but they have headbands that will fit snugly to a child's head. Be sure the cushions seal fully against the head around the entire perimeter of the child's ears. The E•A•R product is called the Economy Hearing Protector, Economy E•A•R™ Muff, or Lawn & Garden E•A•R™ Muff (depending upon the Market; also known as the Model 1000 in the industrial market) and the Peltor product is the Junior™ earmuff (Codes 97070, 97022, and 97023).

Most of the 3M brand hearing protectors are available for individual purchase by consumers over the web at www.noisebustersdirect.com or the Earplug Superstore at <http://earplugstore.stores.yahoo.net/>.

Two non-3M products that may also work are malleable silicone (sticky slugs of silicone that stay in place due to their tackiness), and custom earmolds. The silicone plugs, available at many drug and grocery stores, cause a large and potentially annoying occlusion effect (makes the wearers voice and body sounds appear loud and boomy in their own ears). Custom earmolds can be quite comfortable and reasonably protective, but the problem in young children is the need for, and associated costs of remakes, as the child grows and earcanals change size and shape. A local audiologist can take impressions and make recommendations.

Swimming

Some physicians recommend earplugs to keep water from entering the earcanals during swimming and bathing, either to prevent infections of the earcanal or as protection for children with pressure-equalization tubes through their eardrums. The noise-attenuation plugs listed above that also work for swimming applications are the Swimming plugs, Classic Small, and the silicone slugs and custom earmolds. When foam earplugs are used for water protection, the hands, plugs, and the earcanals must be dry before the plug is rolled down and inserted. The E-Z-Fit plug is not recommended for swimming.

Children under age 5 (toddlers)

There are no products of which we are aware that are targeted specifically for this age group. The best suggestion is to select from the products listed for the 5 – 15 age range and see if one might fit, with proper retention in the ear, and do the job. See the *Tips for Fitting Hearing Protectors* discussed below. Custom earplugs can be appropriate for this age group providing that an adequate fit and seal is maintained while the child's ear grows, which necessitates frequent remakes by the audiologist.

Young children are at risk of swallowing small earplugs so they should be worn under adult supervision. One approach is to use earplugs attached to a cord and pinned to the child's clothing.

Infants and newborns

To our knowledge there is only one product marketed to these age categories - the Natus MiniMuffs™ foam pads <www.natus.com>. They provide a small amount of noise reduction and are intended for newborns in nurseries and incubators.

Other possible options for infants or newborns are the ones listed on the prior page for young children and early teens. Depending upon the size of the child they may or may not fit and be usable. Although custom plugs may be feasible, the impressions should be made by a skilled audiologist with clinical experience in this age group in order to cope with the difficulty of taking a proper impression, and to monitor the need for remakes due to the rapidly changing earcanal size for such young children.

Fitting tips

Regardless of who is fitting an earplug or earmuff, care must be exercised to get a comfortable and effective noise-blocking seal. Suggestions are provided in EARLog #19 *Tips for Fitting Hearing Protectors*. That article is available at http://www.e-a-r.com/hearingconservation/earlog_main.cfm. Additional discussion and in-depth information for fitting foam earplugs is provided in the E•A•R Plug Instruction Booklet – *Tips and Tools* at http://www.e-a-r.com/hearingconservation/booklet_main.cfm.

3M Products	Noise	Swim	Availability
TriFlange™ Reusable Swimming Earplug	x*	x	food and drug stores**
Classic™ Small foam earplug	x	x	safety distributors
E-Z-Fit™ foam earplugs	x		safety distributors**
Economy Hearing Protector, Economy E•A•R™ Muff, Lawn & Garden E•A•R™ Muff	x		hobby, shooting, lawn and garden**
Peltor™ Junior™ Earmuff	x		hobby and shooting**

*Product can block noise, but no NRR claims are made on packaging

**or visit

<www.noisebustersdirect.com>

<http://earplugstore.stores.yahoo.net/>