

Review - ETYMŌTIC Music•PRŌ Musician's Earplugs

Mike Rivers ©2012

Nearly everyone involved with music needs ear protection at some time or other. I keep several sets of Etymotic ETTY musicians earplugs (under \$15) handy, a set in my car, one in my garage for when I use the lawn mower or leaf blower, one in my field tool kit, and a set in my “man purse” for those too-loud concerts and trade shows. My hearing, at 70 years old, is still very good hearing, but I've been careful about exposure to loud sound, musical or otherwise, throughout my life. Not everyone is so cautious or lucky, so it's a good idea to have ear protection available when you need it. Generic ear plugs like the ETTYs offer reasonable protection and fair-to-middlin' fidelity. Custom fitted ear plugs can provide high noise rejection as well as long term comfort., and in a pinch, those foam plugs that look like cigarette filters, while wreaking havoc with frequency response, will protect you when you find yourself in an unexpectedly loud environment.

Active Technology – What the Music•PRŌ Is All About

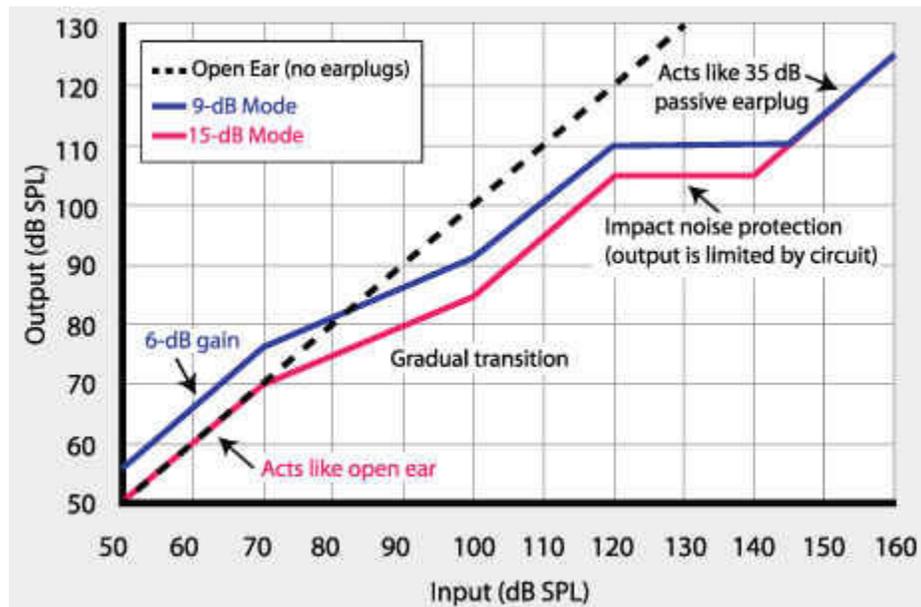
Common ear protection devices are passive. They're literally plugs (hence the name) which attenuate sound entering your ears. A few years back, Etymotic developed the active EB-15 BlastPLG ear plugs for the US military. The active design incorporates a microphone, a DSP compressor, a headphone amplifier, and high definition driver. Rather than simply blocking or filtering the incoming sound by a fixed amount, attenuation increases as a function of the environmental sound level. Just to be clear, these don't work on the same principle as noise canceling earphones which pick up ambient noise with a microphone, invert its polarity, and add it, directly at the ear, to the noise leakage, resulting in partial cancellation of the ambient noise.

The EB-15 worked well for fighting troops and bomb disposal technicians, as well as civilians such as hunters, target shooters, and construction contractors and builders who spend their workday around loud impact noises.

Musicians tried the EB-15 BlastPLG, but many weren't happy with what they did to the music. A group of symphony players having difficulty hearing the rest of the orchestra when playing in a pit gave them a try and gave a more descriptive analysis of what they heard. The sound became distorted at high levels (this wasn't really a consideration given the initial design goal of impact noise protection). Also, when playing at moderate volume, the musicians had difficulty in hearing their own instruments. Based on this feedback, Etymotic went through a series of tweaks to the compressor and the gain structure, eventually arriving at an active ear plug design that made the musicians happy. The end result was the Music•PRO musician's electronic earplug.

How It Works

The Music•PRO earplug has two operating modes, Natural Hearing and Enhanced Hearing. The Natural mode offers a nominal reduction of 15 dB SPL while the Enhanced mode offers 9 dB SPL reduction. The compressor kicks in at 70 dB SPL and provides 2:1 compression up to 85 dB SPL at which point attenuation is 15 dB. While the gain reduction is retained, the compressor reverts to linear gain (1:1 ratio) above 85 dB until a limiter kicks in at 120 dB SPL. The Enhanced mode has a similar transfer function, but provides 6 dB of gain which makes conversation easier below the compressor threshold. A tiny switch selects the mode, and, yes, it sounds weird if, inadvertently, the two are set to different modes. Here's a diagram of the gain and gain reduction action as published by Etymotic. I'd love to be able to confirm that, but I haven't the artificial ear necessary to do so, so we'll have to trust them.



The earplugs are powered by a Type 312 hearing aid battery, common enough to be found in just about any drug or grocery store. This is an air activated battery which comes alive when you remove a stick-on seal and, after being unsealed, has a working life of 2-3 weeks. The Music•PRO earplugs have no on/off switch so they're powered up as long as the battery is installed. They draw little enough current so that there's little point in removing the battery when not in use. Without power, the earplug acts like a full time 25 dB attenuator (note that the diagram above says 35 dB, though 25 dB is quoted elsewhere), so you'll still be protected, though perhaps more than you would like to be, should you run out of juice before the end of the show.

In Use

The kit comes with an assortment of interchangeable earpiece tips of various sizes, both straight foam tips and tips (as shown in the photo) of a three flange tapered “Christmas tree” design. I tried them on for size and chose the ones that felt most comfortable and gave a good seal. It was nice to be able to mix-and-match, as I usually have trouble getting a good fit in my left ear with stock ear plugs. The two earplugs are connected by a thin plastic strap which always gets tangled in the box and got in the way in use, so I’d be inclined to remove it.



How do they sound? Well, the jury is still out on that here. At the AES press demo, they were trying to get 100+ dB SPL from a small Fender Passport system in a hotel room. At that volume, the music sounded pretty bad with or without the ear plugs. I tried them during an outdoor speaker demo during the show, comparing the Music•PRO plugs to my inexpensive Etymotic ETTY plugs and honestly didn’t hear too much difference, but then it wasn’t really loud, the program material was kind of annoying, and the concrete wall around the courtyard didn’t make for good listening.

Back home, I wore the MusicPRO earplugs while listening to some more familiar music, and where I could measure the actual SPL and push my control room monitors as hard as I dared. The MusicPROs had less high frequency attenuation than my passive ETTY earplugs (a good thing), and I didn’t notice any objectionable distortion when listening in the 95-100 dBA SPL range. They sounded pretty good for ear plugs, though I have to qualify that by telling you that, while these plugs weren’t uncomfortable, I have never been able to forget that I’m wearing ear plugs and just go about my business.

I was able to get a better feeling for how the compressor worked when doing the seemingly endless Fall season household task of moving leaves around with a leaf blower, for which I normally wear earplugs. After putting in the MusicPROs, I fired up the blower. At idle, I measured about 76 dBA SPL at my ear. At full throttle, the SPL was about 93 dBA. I could easily hear the speed change between idle and full speed, but the basic engine sound remained fairly constant, suggesting that the compressor was doing its job properly.

One experiment that didn't show much promise was putting headphones on over the MusicPRO plugs. I was thinking about the times when I've had to mix a show too loud for comfort, but which I was also recording. My hope was that the earplugs would protect me when mixing the house, and, since they have pretty good fidelity, I would be able to monitor my recording mix by slipping on a set of phones without removing the earplugs. It just didn't sound very good.

Are They Right For You?.

These days when I write a review, in addition to the technical and functional aspects of a device, more and more often I find myself trying to figure out the right customer or application for the product, and who doesn't really need it. This is one of those "is it right for you?" products.

Generally when we think of spending some significant bucks for earplugs, it's usually for a set that's custom fitted to our own ear canals. This involves an appointment with an audiologist to make molds, then there's the manufacturing turn-around time, and if they don't fit right, you need to do it again. It's quite a commitment, but one that a lot of regular earplug users make because, when you have a good fit, it's a real improvement over an off-the-shelf plug. You're quite likely, on the other hand, to find a set of earpiece tips in the Music●PRO kit that will work just fine, avoiding the cost of custom ear molds. But don't forget the batteries! A pack of 8 costs about \$10. That's not much if you use them all the time, but a casual user can probably figure on about \$2.50 a show to keep them powered.

In order to get good value from these, you will need to use them frequently. I think they would be a good choice for a drummer in a loud band that plays a few gigs a week, or perhaps the regular stage tech in a rock music venue. But I don't see that they would offer much value to someone like me who only a few times a year find myself in an unavoidable situation where I need ear protection. If you're a busy musician and are considering purchasing a set of MusicPRO plugs, keep in mind that more and more artists and bands are moving to in-ear monitoring, which, by necessity, includes highly effective earplugs. However, since there are no custom molded parts, you could probably sell the MusicPROs when you no longer need them. Consider the future.

Through the end of December 2012, Etymotic has a promotional offer where you can try the MusicPROs for 30 days, fill out a survey, and if you don't like them, return them for a full refund including shipping. If you decide keep them, they'll send you one of their high quality mobile device headsets as a bonus. The headset deal may go away at the end of the year, but hopefully they'll extend the return for refund offer for a while so you can have an opportunity to evaluate them yourself before making the commitment.

Quick Summary



- Better fidelity than most passive ear plugs
- Fairly effective seal and reasonably comfortable without the need for custom fitting
- 9 dB setting aids conversation when noise level isn't extreme



- High initial cost
- Short battery “shelf” life, cost of regular battery replacement
- Not a “must have” for everyone.

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<http://www.etymotic.com/hp/mp915.html>