

INNOVATIVE (and Cool!) Safety Products

From safety glasses to protective footwear, today's safety products are more effective and easier to use than ever before

To judge from the product descriptions in safety supply catalogs, quite a few manufacturers see American workers as a bunch of uncooperative five year olds. Cool-looking safety glasses are billed as a way to “guarantee employee use on the job.” Hard hats with football team logos “prove that compliance can be fun.” You can even buy colorful NASCAR Band-Aids, which promise that “Wearing Bandages Can Be Fun After All!”

by Jon Vara

Okay, so maybe you don't want your employees deliberately hammering their fingers to get a nifty-looking bandage. Whether you think your employees need to be treated like kids or not, there are plenty of safety products out there that you may want to try. Here's a look at some of them, based on a page-by-page review of a one-foot-thick stack of printed catalogs and a day or two of web surfing, followed by a hands-on examination of the products themselves.

Eye Protection

There was a time when all safety glasses made the wearer look like a truant from high-school shop class, circa 1965. That time is past. Today's glasses come in a huge variety of lens shades and frame styles, many of which rival the look of expensive sports glasses (see Figure 1). And since most of them sell for only six or seven bucks, you can easily buy several different pairs to accommodate changing weather conditions or lighting.



Figure 1. You, too, can look like you're in a cigarette commercial. The newest generation of safety glasses come in a wide range of tints and styles, and are tough enough to stop most stray pneumatic fasteners (top). Prescription glasses wearers are limited to over-the-glasses style eyewear or glasses that accept special prescription inserts (left).



Figure 2. Expansive foam or soft-plastic earplugs are cheap, compact, and provide excellent noise reduction. The orange-and-yellow MultiMax plugs (at right center) are reversible for comfort and ease of insertion in both large and small ear canals. Some soft-plastic earplugs — like the corded pairs of 556 earplugs from Bilsom, pictured at top left and right — are also available in small- and large-sized versions.



Figure 3. Banded hearing protectors have less sound-dampening ability than most earplugs, but are more convenient for intermittent use. Some versions fold for easy storage in a shirt pocket.

All ANSI-approved safety glasses are marked “Z87” or “Z87.1” on the inner part of the frame and sometimes on the lens as well. Plastic or polycarbonate lenses that meet that standard are tough enough to stop anything from sawdust to most stray pneumatic fasteners. That’s not true of ordinary sunglasses or prescription glasses, even though all lenses manufactured since 1972 are required to meet minimal standards for impact resistance.

If you regularly wear prescription glasses, your range of choices is a lot narrower. The simplest option is a clunky-looking over-the-glasses model — a practical choice but a discouraging one if everyone else on the crew gets to wear the kind of cool wrap-around shades you see in cigarette commercials.

Several manufacturers also make eyewear with prescription inserts, which allow you to attach your own corrective lenses. Unfortunately, the selection is limited and the coolness quotient is distinctly lower. If you’re not interested in seeing well unless you can also look good, you might want to consider contact lenses or laser surgery.

Hearing Protection

All hearing protection devices carry a noise-reduction rating, or NRR. If you’re exposed to a noise level of 120 decibels, for example — roughly the amount of noise generated by a circular saw — while wearing hearing protection with an NRR of 25, you’re exposing your ears to the equivalent of 95 dB.

Earplugs offer the most bang for the hearing-protection buck: They’re cheap, compact, and provide excellent noise reduction (Figure 2).

Foam earplugs. Expanding foam earplugs, which are rolled for insertion and expand to fill the ear canal, are hard to beat for comfort. I especially like the orange-and-yellow *Multimax* plugs from Howard Leight (see “Safety Product Manufacturers,” at the end of the article), which are reversible end-to-end to fit both large and small ear canals. Their added length also makes them easier to remove — unlike stubbier plugs, which may threaten to disappear forever into the dark recesses of your head.

Silicone and soft plastic earplugs depend on a series of thin, flexible flanges to block sound transmission. There’s no need to wait for them to expand after insertion, making them more convenient for intermittent use. They’re easily washed when necessary, so one pair can be used for weeks or months. Like foam plugs, plastic earplugs are available in corded pairs to help prevent loss. Howard Leight’s *Tiger Tails* are another type of loss-resistant plugs, thanks to a flexible coiled connector attached to each plug. The coils are fastened to the wearer’s safety glasses with a plastic sleeve, keeping them out of the way but within easy reach.

Band-type hearing protectors are something like soft-plastic earplugs mounted on a springy, U-shaped band (Figure 3). While they generally don’t block sound as efficiently as foam plugs, they may be the best hearing protection for intermittent use, because they hang conveniently around your neck when they’re not needed, and can be placed in your ears in



Figure 4. Conventional earmuffs (at left) are comfortable, but bulky. Folding muffs (second from left) fit neatly in a toolbox or the glove compartment of your truck. Behind-the-head style muffs (third from left and inset) can be worn with a hard hat or other headgear, while the OptiMuff (at near right) combines eye and hearing protection in one efficient (if slightly goofy-looking) package.

just a few seconds. On the downside, comfort seems to vary widely, depending on the geography of the wearer's ears on his or her head. You may have to try several different protectors before settling on one that works for you.

Earmuff-type protectors. Because they cup over the user's ears, rather than being inserted into them, earmuff protectors are extremely comfortable for long-term use (Figure 4). But their bulk makes them troublesome to store, and they soon become an annoyance if they're hung around your neck between uses. One solution is a pair of folding earmuffs, which takes up less space in your glove compartment or toolbox. If you like the comfort and sound-dampening ability of earmuffs but object to the way the top band prevents you from wearing a hat at the same time, consider a pair of behind-the-head-style earmuffs.

Howard Leight's *OptiMuff* combines a pair of safety glasses with earmuffs, yielding a handy item to leave parked at the table saw or other stationary power tool. The same manufacturer also makes the *Opti-Helmet*, which achieves a protective-equipment hat trick by combining safety glasses and earmuffs with a hard hat.

Rock on. But the real news in earmuffs is the emergence of a range of products that combine hearing protection with electronic entertainment or communication (Figure 5). At least three companies — Elvex, Peltor, and Bilsom — make earmuffs that contain built-in FM radios. Although these



could be dangerously distracting under some circumstances, we can all think of noisy, relatively mindless jobs that would be much more tolerable with some tunes.

The Elvex *Relax* is rechargeable, while the Bilsom and Peltor versions run on AA batteries. All three have gain limiters that hold the volume to about 80 decibels to prevent heavy-metal-induced deafness. If on-air programming doesn't meet your listening needs, both Elvex and Peltor also make earmuffs that can be plugged into a personal cassette or CD player.

Talk on. The same three companies also make electronic noise-canceling earmuffs. These have built-in microphones that transmit speech to the wearer's ears but filter out damaging noise.

Finally, there are earmuffs that double as two-way communications devices. Peltor, for example, makes the *PowerCom* — a self-contained unit with a range of up to two miles. A shorter-range version called the *LiteCom* has a quarter-mile range, which the manufacturer bills as a more precise alternative to hand signals in high-noise areas. Bilsom's *777 Two-Way Communication Muff* is a headphone-microphone combination that can be plugged into the auxiliary jack of the two-way radio you may already own, making it suitable for use in noisy environments.



Figure 5. Peltor's PowerCom two-way radios (at left) provide hearing protection and communications at a range of up to two miles. Elvex's Connect earmuffs (at center) are the hardwood floor sander's dream: hearing protection that can be plugged into a personal CD or tape player. Why didn't anyone think to call this product "The Sandman?" At right, two earmuff-type hearing protectors with built-in FM radios.



Figure 6. Tired of that boring old hard hat? Consider one with a removable sunshade and protective cotton neck flap (at top left). The ANSI-approved cowboy hard hat (at top right) is a regional favorite, according to the manufacturer. You may want to buy two so you can alternate between good-guy white and bad-guy black, depending on your mood. The NFL- and NASCAR-licensed hats (at bottom) cost three times as much as the same hats minus the logos. But if that's what it takes to get your employees to wear them, it may be money well spent.

Head Protection

For the most part, today's hard hats are pretty much like yesterday's: They do a good job of protecting your scalp and skull from dents and dings, but they're still a lot less comfortable than a baseball cap. If you believe that your employees will be more likely to wear a hard hat that is snappy-looking, there are a couple of things you can try.

First of all, you might consider the hats with factory-applied NFL or major-league baseball decals, or those that are plastered with the logos of NASCAR sponsors (Figure 6). There's even an approved hard hat that is patterned after a cowboy hat — although at a weight of 1 pound 3 ounces, it's a full 30% heavier than a standard hard hat. It might be a good way to get your neck in condition for riding bulls.

Be sure that any hard hat you buy meets the 1997 ANSI Z89.1 standard — which, like earlier versions, applies only to serious protective headgear. It does not cover so-called “bump caps,” which will help a little if you bang your head on the underside of an open drawer but aren't approved by OSHA for job-site use.

Hard-hat wearers who work outdoors in the winter already know that there are many cold-weather liners on the market, but there are also some promising hot-weather accessories available. If shade is scarce, for example, you can make your own by equipping a conventional hard hat with an extended sun shield, which produces a sort of impact-resistant sun hat. For an even more striking effect, add a cotton neck protector like those seen in old movies about the French Foreign Legion.



Figure 7. Air Knee kneepads (at left) are inflated by the wearer to provide the desired degree of cushioning. Patella Bead kneepads (at right) use tiny plastic beads as padding for breathable long-term comfort.

Knee Protection

Construction work is hard on the knees, but a good pair of kneepads can help control the damage — or the pain, if the damage is already done. Either way, it's worth looking beyond cheap single-strap foam pads to more supportive pads like those pictured in Figures 7 and 8.

Air Knees are inflatable pads that support your tender joints on a cushion of air. Each pad has a pair of straps that cross behind the knee and secure at the sides with quick-connect plastic buckles.

The cushioning in Fluid Forms' *Patella Bead* kneepads comes from a sealed pouch filled with fine plastic beads, which are said to slide over one another to conform to the shape of the

Figure 8. ProKnee pads (at left) distribute weight along the entire lower leg, while Patella T kneepads (at right) incorporate gel-filled padding that conforms to the wearer's knees.



wearer's knees. According to the manufacturer, the porous beads also make the pads breathable and prevent them from feeling clammy with extended use.

If *Air Knees* are like small air mattresses and *Bead Pads* are portable beanbag chairs, *Patella T* kneepads — also made by Fluid Forms — are the equivalent of little waterbeds that attach with elastic velcro straps. They're built around gel-filled cushions that are said to be orthopedically designed to aid in the recovery of previously injured knees. A pair of them will set you back about \$65. That's substantially more than the first two products but still a lot cheaper than a couple of knee replacements.

But the last word in knee pads may be *ProKnee* pads, which distribute the wearer's body weight over the length of the lower leg. They come in 18 different sizes for a custom fit and are priced accordingly. Occasional users are likely to balk at the \$150 price tag. But, if you spend a lot of time on your knees — and you already suffer from knee pain — they may be well worth the money. If they don't work, it's probably time for one of those aluminum walkers.

Foot Protection

Steel-toed boots will protect your toes from dropped objects, but they're no help when it comes to punctures from beneath. How many carpenters do you know who have never stepped on a nail? One solution might be to wear wooden shoes to work, as many Dutch carpenters do. As a matter of fact, the European Union has performed exhaustive tests on traditional wooden shoes, and considers them to be equivalent to steel-reinforced safety footwear. But if you'd rather not go around looking like a paint-company mascot, you have a couple of alternatives (Figure 9).

Several companies manufacture work boots with stainless-steel midsoles, which will defuse most encounters with protruding nails. ANSI standard Z41 defines puncture resistance in more detail, if you're interested. Surprisingly, the Z41-compliant boots we examined didn't feel much heavier or stiffer than most heavy-duty work boots.

If you find even ordinary boots too restrictive, consider a pair of *Lam-In-Soles* from Red Head Brass, which are flexible stainless-steel innersoles lined with a thin latex pad. They can be slipped into sneakers, running shoes, or ordinary boots to keep nails outside your feet, where they belong. At less than \$15 a pair, they're even cheaper than a tetanus shot.

Respiratory Protection

When it comes to respiratory protection (Figure 10), you pretty much get what you pay for. A case in point is the familiar nuisance-dust mask, which can be bought in quantity for as little as 14 cents apiece. Also known as "comfort masks," they're not NIOSH approved, and are suitable only for nontoxic dusts, like sawdust, that aren't believed to cause scarring of the lungs. In effect, they're adequate protection only if you're working in an environment where you really don't need any protection at all.



Figure 9. It's a sinking feeling to lift your foot and find a board nailed to it. Red Wing's 8234 work boots feature a built-in stainless-steel midsole that resists nail punctures, as well as a steel toe. Lam-In-Sole puncture-resistant insoles can be slipped into ordinary boots or even sneakers.




Figure 10. Respiratory protection, clockwise from top center: disposable nuisance-dust mask, NIOSH-approved N95 respirator, N95 respirator with exhale valve and mesh-reinforced shell, and half-mask respirator with organic-vapor cartridges.

If you're involved in demolition or other seriously dusty work, it's well worth investing a dollar or two in a disposable particulate respirator, which is much sturdier than a comfort mask and has two adjustable straps for a better fit. A good choice for general use is the N95 type (a NIOSH designation, not a manufacturer's model), which removes 95% of airborne particulates. Masks with exhalation valves cost a few cents more but help prevent your glasses from fogging with exhaled moisture. Valve-equipped masks are also more comfortable for extended use because less humidity builds up inside the mask.

The next step up, for severe dust exposure or protection from solvent fumes or other gases, is a silicone or rubber half-mask cartridge respirator. Be sure to get the right cartridges for the hazard you'll be facing. The most common is probably the

organic vapor cartridge, which protects against paint fumes, contact cement, and other common solvents. A typical half-mask respirator costs about \$20, not including the cartridges. Depending on the type selected, a pair of cartridges will cost another \$10 to \$50.

You can also buy disposable cartridge respirators (sometimes called "low-maintenance" or "maintenance-free" respirators) that get tossed in the dumpster when the nonreplaceable cartridges are used up. While that's a more costly alternative, it does away with the need for periodic cleaning and replacement of broken or missing parts. 

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Safety Product Manufacturers

Aearo Company

5457 W. 79th St.
Indianapolis, IN 46268
800/678-4168
www.peltor.com
Safety eyewear, respiratory protection, earplugs, Peltor earmuffs

Air Knee

333 E. Stuart Ave., Suite F
Redlands, CA 92374
877/247-5633
www.airknee.com
Kneepads

American Allsafe

99 Wales Ave.
Tonawanda, NY 14150
800/231-1332
www.americanallsafe.com
Eye and respiratory protection, Outlaw western hard hat, hearing protection

Brenton Safety

242 Shaw Rd.
So. San Francisco, CA 94080
800/733-4333
www.brentonsafety.com
Distributor of Lam-In-Sole protective insoles and Paulson hard hat sun shields

Dalloz Safety

205 Washington St.
Reading, PA 19601
800/345-4112
www.cdalloz.com
Bilsom hearing protection; Willson safety glasses, hard hats, and respirators

Encon Safety Products

P.O. Box 3826
Houston, TX 77253
800/283-6266
www.enconsafety.com
Eye protection

Elvex Corporation

P.O. Box 850
Bethel, CT 06801
800/888-6582
www.elvex.com
Eye and hearing protection

Fluid Forms

4840 Sterling Dr., Unit C
Boulder, CO 80301
877/604-9269
www.patella-t.com
Patella T and Patella Bead kneepads

H.L. Bouton

11 Kendrick Rd.
Wareham, MA 02571
800/426-1881
www.hlbouton.com
Eye protection

Howard Leight Industries

7828 Waterville Rd.
San Diego, CA 92154
800/327-1110
www.howardleight.com
Hearing protection

Moldex-Metric Inc.

10111 W. Jefferson Blvd.
Culver City, CA 90232
800/421-0668
www.moldex.com
Hearing and respiratory protection

Mine Safety Appliances

P.O. Box 426
Attsburgh, PA 15230
800/672-2222
www.msanet.com
Logo hard hats

Olympic Optical

P.O. Box 752377
Memphis, TN 38175
800/238-7120
www.olympicoptical.com
Eye protection

ProKnee

134 Devine Rd.
Whitefield, ME 04353
800/549-5018
www.proknee.com
Kneepads

Red Wing Shoes

314 Main St.
Red Wing, MN 55066
800/328-9453
www.redwingshoe.com
Puncture-resistant work boots

U.S. Safety

P.O. Box 15965
Lenexa, KS 66285-5965
800/821-5218
www.ussafety.com
Eye and respiratory protection