



Eye Protection General Product Guide

Kim MacDougall

Research Scientist
Kimberly-Clark Safety Division
Roswell, Georgia

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SAFE AND HEALTHFUL WORKING ENVIRONMENTS

OSHA:

OSHA develops its own standards but also heavily relies on those established by the American National Standards Institute (“ANSI”) and the National Institute of Occupational Safety and Health (“NIOSH”). In addition, the Canadian Standards Association develops standards to enhance public safety and health. For additional information, visit the following websites:

www.osha.gov

www.ansi.org

www.cdc.gov/niosh/homepage.html

www.csa.ca

OSHA standard 29 CFR Part 1910 (sections 132-138) sets the standard for Personal Protective Equipment (“PPE”). Subpart I of the standard establishes criteria that require employers to provide hand protection to employees if required while on the job. The standard can be paraphrased as follows:

- a) General Requirements: Employers shall select and require employees to use appropriate hand protection when employee’s hands are exposed to hazards such as those from:
 - Skin absorption of harmful substances;
 - Severe cuts or lacerations;
 - Severe abrasions
 - Punctures;
 - Chemical burns;
 - Thermal burns; and
 - Harmful temperature extremes

- b) Selection: Employers shall base selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, and the hazards and potential hazards identified.

The purpose of this provision is to assure that employees are using the appropriate type of gloves for the tasks to be performed. For example, foundry workers generally must wear gloves that provide thermal protection, while meat cutters must wear gloves that protect against cuts. While the selection of the appropriate type of glove for a certain task or hazard may seem to be obvious, OSHA’s rule making record indicates that many hand injuries have occurred because the wrong type of glove was used for a certain task.

Hazard Assessment-

It is vitally important to properly assess the hazards of the task or job.

The principles of proper hazard assessment are:

1. Identify the hazards in the workplace,
2. Attempt to engineer the hazards out of the task or job,
3. Evaluate the proper PPE to be used by the employee, and
4. Train the employee in the proper use and care of PPE.

SAFETY EYEWEAR

I. Overview: Reports vary depending on the source but an estimated 1,000 to 2,000 eye injuries occur in American workplaces on a daily basis. Of the total number of work related injuries, 10-20% result in temporary or permanent vision loss. The financial cost of these injuries is enormous—more than \$300 million per year in lost production time, medical expenses, and workers compensation. Some estimates range as high as \$937 million annually. No dollar figure can adequately reflect the personal toll these accidents take on the injured workers.

What contributes to eye injuries at work?

--Not wearing eye protection. Reports indicate that nearly three out of every five workers injured were not wearing eye protection at the time of the accident.

--Wearing the wrong kind of eye protection for the job. About 40% of the injured workers were wearing some form of eye protection when the accident occurred. These workers were most likely to be wearing protective eyeglasses with no side shields, though injuries among employees wearing full-cup or flat-fold side shields occurred, as well.

What causes eye injuries?

- Flying Particles (Grinding dust, nails, pieces of wire, concrete, and many more)
- Falling or shifting debris, building materials, and glass
- Chemical splash. (Acids, bases, fuels, solvents, lime, wet or dry cement powder...)
- Liquids or gases under pressure (spray cans are an increasing source of chemical eye injury that is compounded by pressure. Whether containing caustics or irritants, spray cans must be carefully used.)
- Bloodborne pathogens (hepatitis or HIV) from blood, bodily fluids, and human remains.
- Welding fumes

- Harmful radiation
- Any combination of these or various other hazards

Where do accidents occur most often?

--Craft work; industrial equipment operation. Potential eye hazards can be found in nearly every industry, but reports indicate that more than 40% of injuries occurred among craft workers, like mechanics, repairers, carpenters, and plumbers. Over a third of the injured workers were operatives, such as assemblers, sanders, and grinding machine operators. Laborers suffered about one-fifth of the eye injuries. Almost half the injured workers were employed in manufacturing; slightly more than 20% were in construction. Keep in mind that it is not always the operator that incurs the eye injury. In many cases, the fellow employees suffer eye injuries from particles flying from the machinery/tools being used.

How can eye injuries be prevented?

--Always wear effective eye protection. OSHA standards require that employers provide workers with suitable eye protection. To be effective, the eyewear must be of the appropriate type for the hazard encountered and properly fitted. For example, surveys show that 94% of the injuries to workers wearing eye protection resulted from objects or chemicals going around or under the protector. Eye protective devices should allow for air to circulate between the eye and the lens. Only 13 workers injured while wearing eye protection reported breakage.

--Better training and education. Most often workers are hurt while doing their regular jobs. Workers injured while not wearing protective eyewear most often said they believed it was not required by the situation. Even though the vast majority of employers furnished eye protection at no cost to employees, about 40% of the workers received no information on where and what kind of eyewear should be used.

What type of safety eyewear is available?

-Non prescription safety glasses. Safety glasses with side protection provide minimum protection and are for general working conditions where there may be minor dust, chips or flying particles. Side protection includes side shields and wraparound-style safety glasses.

Polycarbonate lenses are lightweight and provide the best impact protection, but generally are not as scratch-resistant as glass unless treated with a hard coating. Anti-fog coatings can be helpful in higher humidity environments.

OSHA's eye and face protection standard, 29 CFR 1910.133, requires that eye and face protection be American National Standards Institute (ANSI) Z87.1-certified. ANSI Z87.1 compliant glasses are marked on the lens or frame.

-Prescription safety glasses. Workers who wear non-safety prescription glasses should wear tight-fitting goggles over the glasses, over the glass safety glasses or specialty safety glasses with RX inserts. Because contact lenses may present a significant corneal abrasion risk when working in dusty areas, contact lens wearers should wear un-vented goggles.

-Goggles. Goggles provide higher impact, dust and chemical splash protection than safety glasses. Goggles for splash or fine dust protection should have indirect venting. Use direct-vented goggles for less fogging when working with large particles. Safety goggles designed similar to ski-type goggles have high air flow to minimize fogging while providing better particle and splash protection than standard glasses.

Safety glass users should graduate to goggles when there is more than occasional particle hazards, such as when cutting wood. The choice, in many cases, comes down to the assessment of the severity of the hazard.

-Hybrid safety glasses or goggles. Safety glasses with foam or rubber around the lenses provide better protection from dust and flying particles than conventional safety glasses. Wraparound safety glasses that convert to goggles with a soft plastic or rubber face seal may offer better peripheral vision than conventional goggles. It is important to avoid hybrids or wraparounds when more impact protection is needed than safety glasses provide. In those cases, use goggles.

-Face shields. When protecting the eyes, don't forget to guard against injuries to the face. For highest impact protection, face shields protect the full face from spraying, chipping, grinding and critical chemicals or bloodborne hazards.

Never wear face shields, which provide secondary protection, without primary eye protection (safety glasses or goggles). Wear safety glasses or goggles under face shields to provide protection when the shield is lifted. Primary protection helps prevent particles that get under the shield from lodging in the eyes.

-Specialty Protection. Use other types of protection, such as filtered helmets or goggles, for tasks such as welding or working with lasers. Lenses for welding light protection must be marked with an appropriate "shade number" for the task. Remember to protect the eyes even when the helmet is lifted. Welder's helpers, other workers and bystanders should have welding light protection when near torch cutting or welding. Use ANSI Z136-certified eye protection for laser light hazards.

-Full face respirators. While full-face respirators provide the best general dust, chemical and smoke protection, they will not necessarily be Z87.1-compliant for impact protection, or seal properly over glasses. Use prescription inserts compatible with a respirator. Respirators should be professionally fitted.

II. Materials:

1. Lens Material:

a. Glass-

- i. Are not easily scratched.
- ii. Can be used around harsh chemicals
- iii. Can be made into corrective prescriptions
- iv. Are sometimes heavy and uncomfortable

b. Plastic-

- i. Are lighter weight than glass
- ii. Protect welding splatter
- iii. Are not likely to fog even uncoated
- iv. Are not as scratch resistant as glass

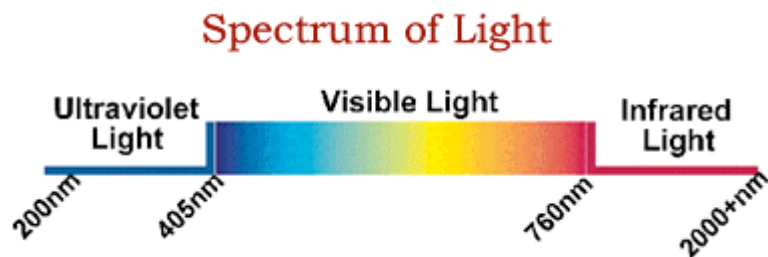
c. Polycarbonate-

- i. Are extremely lightweight
- ii. Protect against welding splatter
- iii. Are not likely to fog
- iv. Are stronger than glass and plastic
- v. Are more impact resistant than glass and plastic
- vi. Are not as scratch resistant as glass

III. UV Protection:

What is Ultraviolet Light?

Light energy travels through space in the form of waves, with different types of light having different wave lengths. Ultraviolet light rays, the damaging component in sunlight, are so short that they aren't part of the visible light spectrum.



How damaging is Ultraviolet Light?

In the last few years people have become much more aware that ultraviolet light

from the sun can cause injury to the skin. Less well known is that those same ultraviolet rays can cause eye problems. A lifetime of exposure to sunlight can cause corneal, lens, and retinal damage.

Direct sunlight is most intense in the summer months, between 11 a.m. and 3 p.m. (daylight saving time). Ultraviolet radiation is also greater at high altitudes and closer to the equator. Snow, sand and open water all readily reflect these rays, as do the glass and concrete on buildings. This can result in increased exposure of the eyes and face, causing damage in less time. Artificial sources, such as welding arcs and sunlamps, have caused damage to the eyes and skin.

Do safety glasses offer good protection?

Standards for safety glasses have improved dramatically over the last few years, and today most safety eyewear is effective at screening or reflecting ultraviolet light. Look for stickers that say the lenses provide a minimum of 90 percent protection from UV A and 95 percent from UV B light. Lenses tinted dark grey or dark green offer the best results. Please know that all Kimberly-Clark V-Series eyewear provide 99.9% UVA/UVB protection.

The most important consideration when buying safety eyewear is how well they cover the eye: large-size lenses, glasses that fit snugly, and a wrap-around design all help reduce damaging rays that can easily leak in around the edges of inappropriate or poor-fitting sunglasses.

IV. Fit:

- Overview: Safety glasses should rest firmly on top of the nose and close to, but not against, the face. The nose piece should not slide down the face due to sweat or moisture. If the glass slides down even a small amount, the user will lose some protection.

Safety glasses should have a three-point fit, meaning the frame should touch the face in three places - at the nose bridge and behind each ear. Temples should wrap around the head, with slight pressure behind the ear, not above the ear.

V. Safety Eyewear Features:

1. Lens colors: Kimberly-Clark provides an extensive selection of lens colors to accommodate most applications. Listed below are the lens colors offered by Kimberly-Clark accompanied by a brief description.

- a. *Clear*- Allows maximum visible light transmission. Primarily used for indoor applications where impact protection is required.
- b. *Clear Anti-Fog*- An additional anti-fog coating is added to the clear lens to prevent glass fogging in high humidity environments where sudden shifts in temperature occur.
- c. *Smoke*- Worn on bright, sunny days, these lenses provide maximum glare reduction and are ideal for applications where eye strain is a major factor. They show objects true to natural color and flatten light to maintain normal depth perception.
- d. *Indoor/Outdoor*- this light tint coating is a comfortable solution for moving from indoor or shaded locations to direct sunlight and back. I/O diminishes glare to ease the eye's adjustment from inside to outside applications, reducing eye strain.
- e. *Amber*- Light gathering properties make this lens ideal for low light environments in which contrast is low; highlights and defines by blocking out much of the blue light.
- f. *Silver Mirror*- These dark tinted lenses with a reflective coating are great for outdoor applications where very bright sunlight and glare cause eye strain and fatigue.

2. Nosepieces: There are many styles of nosepieces that provide different levels of comfort and some that prevent slippage.

- a. Integrated Polycarbonate nosepiece are designed into the lens mold. They provide no grip and are made out of polycarbonate material.
- b. PVC- Good value
- c. Self Adjusting Fingers- Silicone or PVC nosepiece that can be moved in and out to adjust nose piece width. Enhances omfortable fit.

3. Temples-

- a. Fixed
- b. Fixed with Rubber temple.
- c. Rubber Tipped Bayonet (straight back) Style
- d. Ratcheting Temple-

4. Frame-

- a. Polycarbonate
- b. ABS
- c. Dual Molded with cushioning

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1-800-225-6401

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safetyknowledgenetwork@kcc.com

EMAIL

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