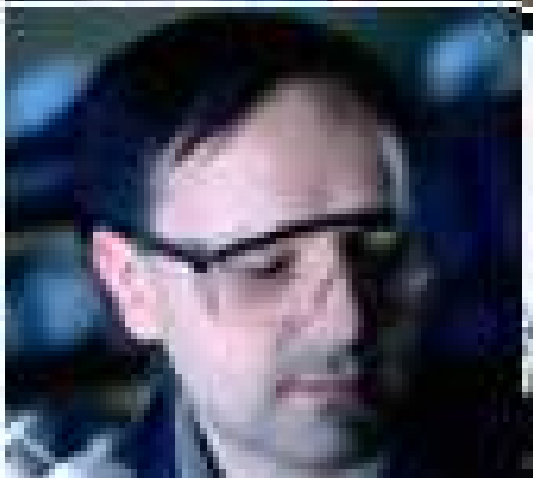




# *EYE SAFETY*





# Common Eye Hazards

- Dust, concrete, and metal particles
- Falling or shifting debris, building materials, and glass
- Smoke and noxious or poisonous gases
- Chemicals (acids, bases, fuels, solvents, lime, and wet or dry cement powder)
- Cutting or welding light and electrical arcing
- Thermal hazards and fires
- Bloodborne pathogens (hepatitis or HIV) from blood, body fluids, and human remains



## How many work-related eye injuries are there each day?

- 2000 eye injuries occur everyday at work in the US
- Construction workers have one of the highest eye injury rates
- Particles of dust, metal, wood, slag, drywall, cement etc. are the most common source of eye injury to carpenters
- Even “minor” eye injuries can cause life-long vision problems and suffering—a simple scratch from sawdust, cement, or drywall can cause corneal erosion that is recurrently painful
- Hammering on metal which gives off metal slivers and the rebounding of the ordinary nail are two of the most common causes of vision loss in construction workers



# What are the eye hazards at your site?

- Hammering, grinding, sanding, and masonry work that may produce particles
- Handling chemicals may lead to splashes in the eye
- Wet or powdered cement in the eye can cause a chemical burn
- Welding leads to exposure to arcs and flashes (intense UV radiation) for welders, helpers, and bystanders
- Dusty or windy conditions can lead to particles in the eye
- Eye injuries can result from simply passing through an area where work is being performed
- Coworkers around or above you may generate the hazard

# EYE SAFETY



Thousands of people are blinded each year from work-related eye injuries. According to the Bureau of Labor Statistics (BLS), nearly three out of five workers are injured while failing to wear eye and face protection.



# How can you reduce the eye hazards at your site?

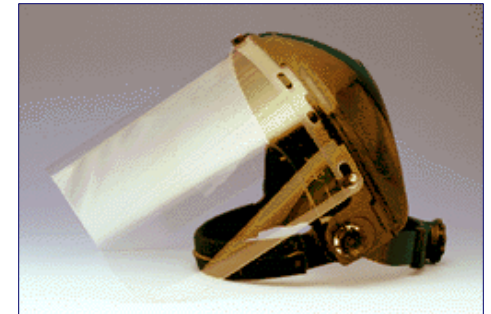
## 3-Part Eye Safety Strategy

- Use engineering controls (best) such as machine guards that prevent the escape of particles or welding curtains for arc flash protection
- Use administrative controls (good) such as making certain areas “off limits” unless that is your work assignment area or putting passage ways out of active work zones
- Use the proper protective eyewear (required, but doesn't remove all risk)

# OSHA STANDARDS

The following OSHA standards provide mandatory requirements and compliance assistance for employers when selecting proper eye and face protection:

- **1910.132 - General requirements**
- **1910.133 - General Industry**
- **1915.153 - Maritime**
- **1926.102 - Construction**
- **1910.252 - Welding, Cutting, and Brazing**





# PPE REQUIREMENTS

**Eye and face protection must comply with the American National Standards Institute, ANSI Z87.1-1989 if purchased after July 5, 1994, or ANSI Z87.1-1968 if purchased before July 5, 1994.**



- **1910.133(b)(1)**
- **1915.153(b)**
- **1926.102(a)**

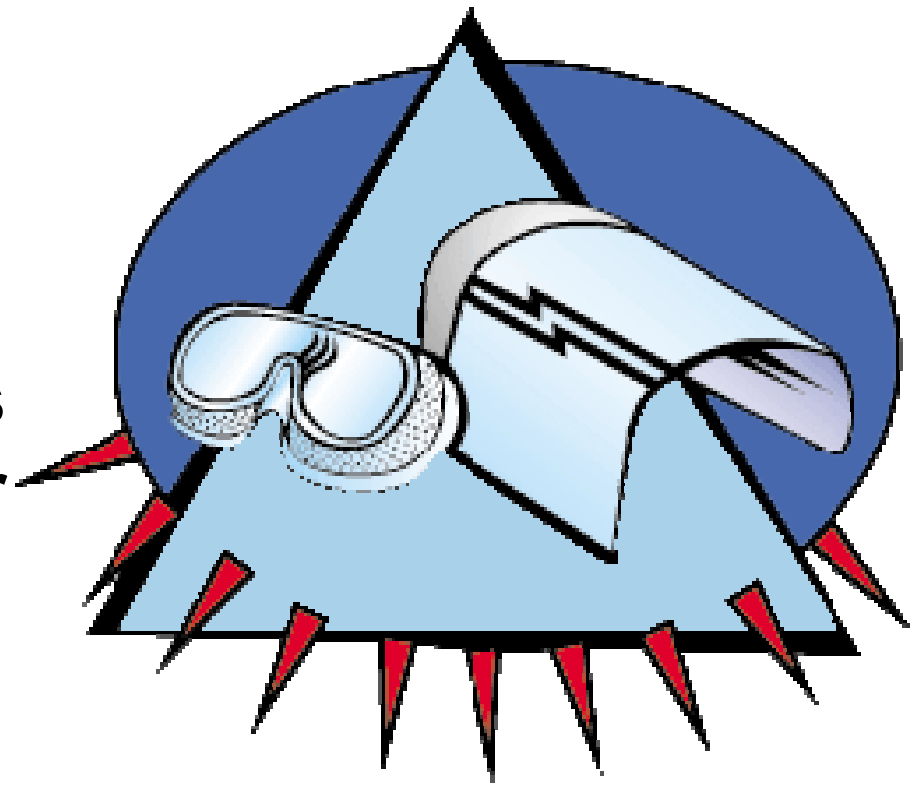




# Protecting Employees from Workplace Hazards

Employees must be provided with eye and face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.

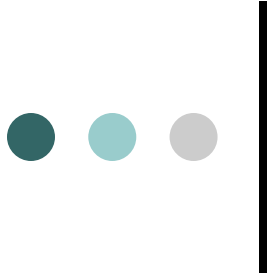
**[1926.102(a)(1)]**



# What is safety eye and face protection?



- Safety eye and face protection includes non-prescription and prescription safety glasses, clear or tinted goggles, face shields, welding helmets, and some full-face type respirators that meet the ANSI Z87.1 Eye and Face Protection Standard
- The safety eyewear must have “Z87” or “Z87+” marked on the frame and in some cases the lens



## **When are you required to have “side protection” or “side shields” on your safety glasses?**

- Side protection is required any time that there are hazards from flying particles or objects
- Older styles used side shields
- Many newer styles provide side protection as wrap around safety glasses
- Some styles also have brow protection along the top of the glasses
- Many eye injuries have occurred because there was not adequate side protection, proper fit, or particles fell from above such as when drilling overhead

# Hazard Assessment

<b>HAZARD TYPE</b>	<b>HAZARD TYPE</b>	<b>COMMON RELATED TASKS</b>
<b><u>IMPACT</u></b>	Flying objects such as large chips, fragments, particles, sand, and dirt.	Chipping, grinding, machining, masonry work, wood working, sawing, drilling, riveting, sanding, etc.
<b><u>HEAT</u></b>	Anything emitting extreme heat.	Furnace operations, pouring, casting, hot dipping, welding, etc.
<b><u>CHEMICALS</u></b>	Splash, fumes, vapors, and irritating mists.	Acid and chemical handling, degreasing, plating, and working with blood.
<b><u>DUST</u></b>	Harmful dust.	Woodworking, buffing, and general dusty conditions.
<b><u>OPTICAL RADIATION</u></b>	Radiant energy, glare, and intense light	Welding, torch-cutting, - brazing, - soldering, and laser work.



## Check the fit of your safety glasses.

### Where are the biggest gaps?

- The biggest gaps are usually near the corners of the glasses
- The bigger the gap the more exposure to hazards coming from a slight angle from above or below

### Do the glasses fit snugly against the face or slide down your nose?

- Glasses that are not snug against the face also create larger gaps in protection
- Some safety glasses are made in different sizes to fit different shape faces
- Different styles also may fit one person better than another
- Adjustable temples and eyewear retainers or straps help hold the glasses in the proper position close to the face



# What are the lenses made of in your safety glasses?

- Most non-prescription safety glasses have polycarbonate lenses
- The non-prescription safety glasses are tested by shooting a 1/4" BB at 100mph at the lens and dropping a 1 lb pointed weight from 4' on the lens—if it breaks in either test it won't have the Z87 mark
- Prescription safety glasses may have polycarbonate, glass, or a plastic called CR39 but these glasses only have to pass a test of dropping a 2oz steel ball from 4' unless they are marked Z87+; then they must pass the high velocity/impact tests
- Polycarbonate lenses are much more impact resistant than glass or plastic lenses. Glass and plastic lenses usually shatter into small sharp pieces, but polycarbonate usually just cracks

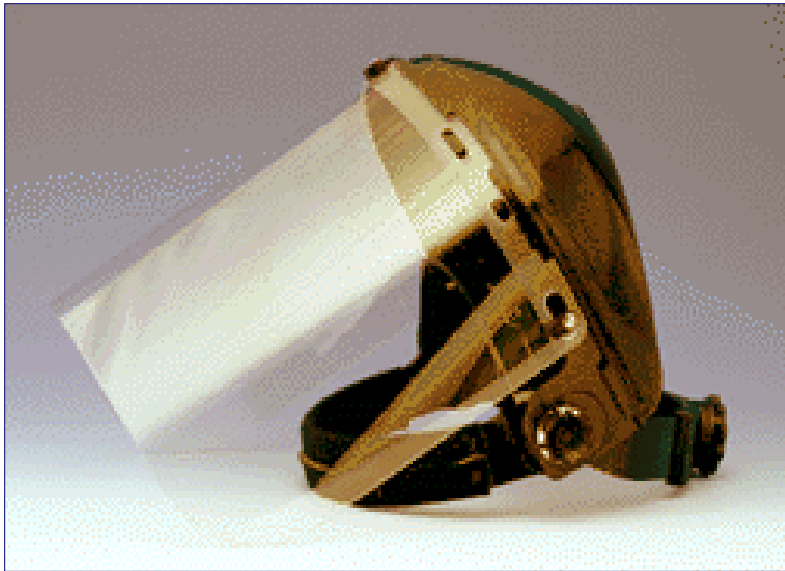
# Impact Hazards: Safety Spectacles & Goggles

- Workers are required to use eye **safety spectacles** with side shields when there is a hazard from flying objects.
- **Goggles** fit the face immediately surrounding the eyes and form a protective seal around the eyes. This prevents objects from entering under or around the goggles.





# Impact Hazards: Face Shields



Face shields are intended to protect the entire face, or portions thereof, from impact hazards such as flying fragments, objects, large chips, and particles.

When worn alone, face shields *do not* protect employees from impact hazards. Use face shields in combination with safety spectacles or goggles for additional protection.



# Chemical Hazards: Safety Goggles

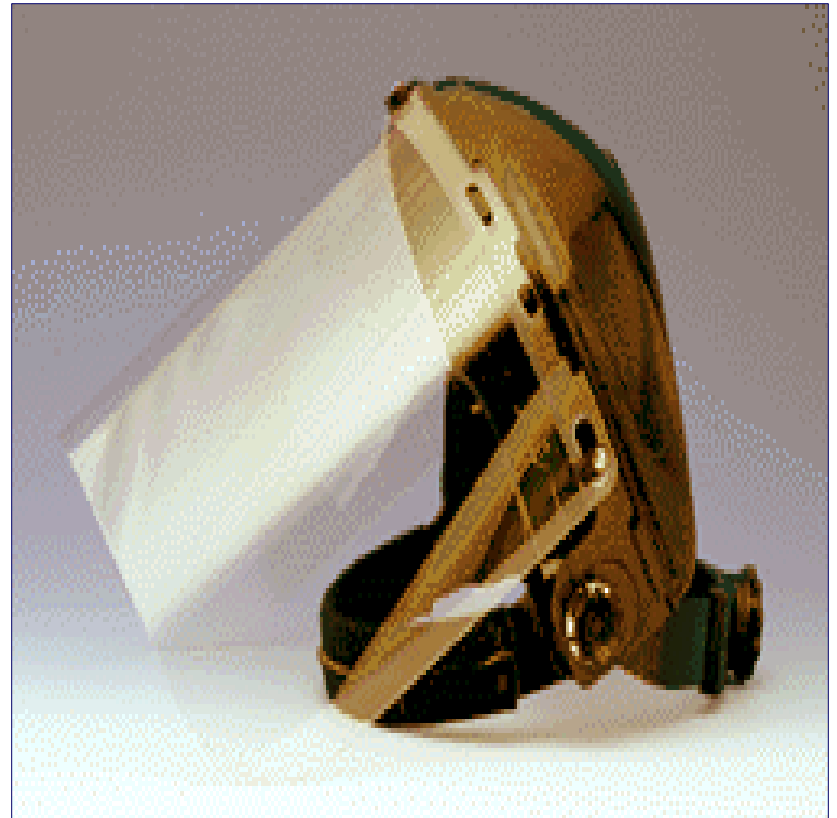


**Safety goggles protect the eyes, eye sockets, and the facial area immediately surrounding the eyes from a variety of chemical hazards. Goggles form a protective seal around the eyes, preventing objects or liquids from entering under or around the goggles.**

# Chemical Hazards: Face Shields

Face shields are intended to protect the entire face from a variety of chemical hazards.

All face shields are considered secondary protection and must be used *in addition* to safety goggles to provide adequate protection.



# Optical Radiation: Filter Lenses



Wearing protection with the correct filter shade number is required to protect workers' eyes from optical radiation. When selecting PPE, consider the type and degree of radiant energy in the workplace.

- **1910.133(a)(5) -General Industry**
- **1915.153 (a)(4) -Maritime**
- **1926.102(b)(1) -Construction**

# SAFETY TIPS.....



- Don't wear contact lenses during any type of hot work!!!
- Contact lenses may present a significant corneal abrasion risk when working in dusty areas

\*\*\*\*Prescription safety glasses with side shields\*\*\*\*