

**The rules and costs of eye safety!**

# **Safety Eyewear Training Guide**

**Hi-Tech**  
Optical, Inc.

Protecting your greatest assets...  
your workers and their eyes.

# This Guide Includes ...

- Reasons for an Eyewear Program
- What Law?
- Safety Glasses vs. Dress Glasses
- ANSI Standards
- The Hidden Costs of Eye Injury
- The Actual Costs of Eye Injury
- Corporate Safety Eyewear Programs

# Reasons for an Eyewear Program

- **It's the law.** If there are dangers of flying particles or other substances that could endanger workers' eyes, you must have a safety eyewear program.
- **Costs of eye injury.** When an injury occurs, there are two basic issues:
  - Due to the eye injury, the injured **employee will suffer** the pain from the injury, as well as lost time at work and possible physical impairment.
  - The **employer can incur costs** from the injury including medical coverage, disability, worker's compensation, property damage and potential lawsuits.

# What Law?

- According to 29CFR1910.133, employers are required to meet standards in eye safety. Some of the language includes:
  - “The employer shall ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.”
- In an OSHA audit, Personal Protective Equipment (PPE) programs are evaluated for compliance. If a company’s safety program doesn’t adhere to legal requirements, OSHA can impose fines.
- For the full description of this law, read it online at:  
[http://edocket.access.gpo.gov/cfr\\_2002/julqtr/29cfr1910.133.htm](http://edocket.access.gpo.gov/cfr_2002/julqtr/29cfr1910.133.htm)

# Safety Glasses vs. Dress Glasses

Many times employees will wear their dress (regular) glasses with sideshields that seem to fit the frame, thinking they are meeting ANSI Z87 standards for eye and face protection.

There are major distinctions between prescription safety glasses and prescription dress (regular) glasses. Employees cannot wear a regular pair of glasses and assume that they comply with OSHA's requirements. Lenses and frames must meet **ANSI Z87 standards** to qualify as compliant with OSHA safety eyewear.

# ANSI Z87 Standards

Safety frames, lenses, and shields must meet the latest ANSI Z87 standards.

## Safety Frames

Safety frames must pass rigorous tests to retain a lens upon impact and evaluate the strength of the templates and/or sideshields.

- The **High Mass Impact Test** is when a 500g (17.6 oz) pointed projectile is dropped from a height of 127cm (50 in.) onto a glazed frame. No piece can be detached from the inner surface of any spectacle component and the lens must be retained in the frame to pass this test.
- The **High Velocity Impact Test** is when the frame, with lens, is shot with a 6.35 mm (1/4 in.) steel ball traveling at 45.7m/s (150ft/s). No piece can be detached from the inner surface of any spectacle component. The lenses must be retained in the frame.

# ANSI Z87 Standards

## Safety Lens

Safety lenses must meet manufacturing and testing requirements to meet ANSI Z87 standards.

- High impact lenses are tested with a **High Velocity Impact Test** in which the lenses are mounted on a test holder and must be capable of resisting impact from a 6.35mm (0.25 in.) diameter steel ball traveling at a velocity of 45.7m/s (150ft/s).
- Basic Impact lenses, which are usually plastic or glass, do not undergo High Velocity testing. They must carry a warning label about the impact limitations of the lenses.

# ANSI Z87 Standards

## Sideshields

Safety glasses must contain sideshields. Sideshields provide impact resistance to help protect the wearer.

- **The Sideshield Test** is when lateral protection is assessed using a rotation point 10mm behind the corneal vertex. The shields are shot, while on the frame, which is mounted to a head form, with a 6.35mm (0.25in.) diameter steel ball traveling at a velocity of 45.7 m/s (150ft/s). The sideshield shall be impacted 10mm above and 10mm below the plane of the eyes of the head form at the 90 degree rotated angle. If the shields are not designed to properly fit the frame, they may suffer fractures or even break, potentially leading to injury.



# ANSI Z87 Standards

Safety lenses and frames will bear logos to show they comply with ANSI standards.

- Both plano (non-prescription) and prescription safety lenses that meet the ANSI Z87 testing requirements will be monogrammed with the manufacturer's logo. If the lenses meet the High Impact testing requirement, a "+" will be monogrammed after the manufacturer's logo (e.g. HTO+).
- All approved safety frames will prominently bear the "ANSI" imprint in the front and temples of the frame.



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# The Hidden Costs of Eye Injury

- What are the **hidden costs** of not protecting your workers with a safety eyeglass program?
  - Cost for the injured worker's time off
  - Cost for replacement workers until employee can return to work
  - Lower productivity due to the learning period of new replacement worker
  - Cost for supervisor's time on accident related activities
  - Cost for overtime work necessitated by the accident
  - Cost for damage to material and equipment
  - Lower productivity of injured worker after return to work
  - Uninsured medical costs
  - Time spent by management and others on investigations and forms
  - Other costs (equipment rental, contracts lost, bonus loss, litigation and attorneys' fees, etc.)

# Actual Costs of Eye Injury

- According to the US Bureau of Labor Statistics:

\$2,949 (the average cost of a disabling eye injury at in indemnity compensation)  
+ \$994 (for medical payments)  
**= \$3,943 per eye injury**

**Total cost to American Companies = \$354,870,000 per year**

*Note: This figure does not include other indirect costs discussed in the “hidden costs” section.*

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# Corporate Safety Eyewear Programs

From the cost to employee morale, there are many benefits to having an eye safety program.

- The average cost of a prescription safety frame is approximately \$80. With an average cost of \$3,949 per eye injury, **50 employees** could be provided with prescription safety glasses!
- Companies that promote and advocate safety create a feeling among workers that they care about their employee's personal health and well-being.

# Corporate Safety Eyewear Programs

- For information about what a safety eyewear program needs to include, request our free ebook “Safety Glass Program Guide” at <http://www.hi-techoptical.com/free-ebook-safety-glass-program-guide-for-safety-directors/>.
  - It includes the 9 elements necessary for a successful eyeglass program!
- If you need a new vendor or pricing for your corporate safety glass program, you can request a free quote from us at <http://www.hi-techoptical.com/free-quote-for-your-company-safety-eyewear/>.

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