



A DIVISION OF WESCO DISTRIBUTION, INC.

## Eye Protection Ready Reference

Updated 10/2018

1. [The Law](#)
2. [The Essentials](#)
3. [Don't Forget](#)

### 1. The Law

**A. The current standard is ANSI Z87.1-2015. It is required by OSHA for all safety eyewear. The changes are now organized based on the typically organized hazards. [FAQs](#)**

- **Impact & Coverage:** Protectors were previously classified as either basic or high impact. Now the distinction is that they are either high-velocity impact (marked with **Z87+**) or *basic impact* (marked with **Z87**). High-velocity protectors must meet the established high mass and high-velocity tests. Protectors will be marked on both the lens and the frame or housing.
- **Chemical Splash & Dust:** New product requirements and test methods have been added for products intended to provide protection against chemical splash, dust, and fine dust. Protectors meeting the respective requirements will be marked **D3** (for splash and droplet) or **D4** (for dust) on their frames or housings.
- **Optical Radiation:** Classifications and marking requirements also can indicate radiation filtration properties and the hazards for which they are intended to provide protection. The shade/scale numbers (see examples below) indicate levels of protection based on the intensity of the hazard:

**Welding Filters**

**Ultra-violet (UV) Filters**

**Infra-red (Heat) Filters**

**Visible Light (Glare) Filters**

**W plus shade number, i.e. W10**

**U plus scale number, i.e. U6**

**R plus scale number, i.e. R4**

**L and scale number, i.e. L2.5**

- **Size Requirement:** Products made for smaller head sizes will be marked with the letter **H**.
- **Prescription Glasses:** Prescription eye protection will be marked with **Z87-2** on the front of the frame and on both temples.
- **Other:** Eye protection with photochromic lenses will be marked with **V**. Eye protection with a special lens tint will be marked with **S**.

**B. Safety glasses are not OSHA approved for any type of chemical splash protection. They are only intended for protection from flying debris.**

**C. Faceshields are classified as secondary eye protection and must be worn with safety glasses or goggles in all situations.**

## **2. The Essentials**

### **A. What Are My Safety Lenses Made Of?**

All our styles of eyewear feature polycarbonate lenses. Polycarbonate:

- Is the most impact resistant plastic available
- Is the most temperature resistant plastic available
- Offers at least 99% UV protection
- Scratches easily unless hardcoated
- Reacts poorly with chemicals, although the coating does help

### **B. What Are My Choices for Lens Coating?**

- **Hardcoated Lenses** provide scratch resistance to polycarbonate, which typically scratches very easily without such protection. Most of the glasses in our catalog fall into this category. Some brands have trade names for these coatings, such as Crews Duramass and Uvex Ultradura.
- **Anti-Fog Coated Lenses** are ideal for workers performing in extremely hot, cold, or humid conditions. The coating prevents fogging, which can lead to a reduced field of vision. Some brands have names for these coatings, such as Uvex Uvextreme, and HydroShield, Ergodyne Fog-Off, and others.
- **Uncoated Lenses** are common among styles intended to be used by visitors to a facility, or other short-term applications. The only advantage they offer is lower cost. The copy will indicate when a lens is “uncoated.”

### **C. What Lens Colors Are Available?**

- **Clear Lens** – Use indoors, outdoors in below normal light conditions, or where true color recognition is required. 90-92% Visual Light Transmission (VLT).
- **Grey/Brown Lens** – Use outdoors or where there is above average available light. Also called Smoke or Espresso. 15% VLT.
- **Amber Lens** – Use in below normal light conditions or where enhanced contrast is desirable. 90% VLT.
- **Indoor/Outdoor Lens** – Use when working both indoors and outdoors throughout the day. Indoor/outdoor lenses provide true color recognition. 50% VLT.
- **Mirrored Lens** – Use outdoors or where there is above average available light. A mirrored coating is added to provide enhanced style. 15% VLT.
- **Light Blue Lens** – Use during work applications with high levels of sodium vapor lighting and glare. The blue lens counteracts the effect of this yellow lighting to reduce eye strain. Also called Infinity Blue and SCT Blue. 55-57% VLT.
- **Vermillion Lens** – Use to reduce glare and provide true color perception during indoor applications. Lenses enhance contrast, though not as much as Amber Lenses. 55% VLT.
- **Welding Lenses** – Shade 2.0 lens is used for welding-related operations such as torch soldering or welder’s helper applications. VLT is 35% and absorption on infrared light is 85%. Shade 3.0 can be used for certain brazing or cutting applications. VLT is 14-15% and absorption on infrared light is 91%. Shade 5.0 is used in certain torch soldering, torch brazing, or cutting applications. VLT is 2% and absorption on infrared light is 97.5%.
- **Polarized Lenses** – No specific color, but this is a lens which reduces reflective glare (off water, snow, roadways, etc.). VLT is 12%.

For more information about lens tint refer [Uvex Lens Application Guide](#).

## D. What Do I Need to Know About the Categories of Light and Welding Lenses?

- **Ultraviolet (UV) Light** – Typically polycarbonate lenses will block 99.9% of UV light up to 385 nanometers (nm). Depending on the tint of the lens the UV protection may be more than 385 nanometers. Exposure to UV light over time, can cause cataracts.
- **Visible Light** – Visible light is the only light you see. The visible light spectrum is always in the same order of colors: red, orange, yellow, green, blue, indigo, violet. The visible light scale is 400-700 nm.
- **Infrared (IR) Light** – Is the larger wavelengths on the upper portion of the light spectrum, greater than 700 nm.
  - Typical workplace exposure to IR occurs from either welding or lasers
  - When welding, you must use a shaded lens
  - We have Shade 2 (light green) to Shade 14 (dark green) lenses available
  - Shade 5 is commonly used for torch cutting and oxy-acetylene welding
  - Shade 10 is the minimum for most arc welding and mig/tig welding jobs
  - Shade 5 is darkest lens allowed in a safety glass before needing full facial protection to prevent burning skin
  - Lasers require specific customer information before ordering.

## E. What Are My Venting Options for Goggles?

- **Indirect Vent** goggles protect against chemical liquids and dusts. These are the only goggles that can be used for protection from chemical splashes. These goggles are the most versatile and somewhat breathable.
- **Direct Vent** goggles offer maximum airflow, but are only approved for particulate protection during jobs such as grinding, cutting, dusty applications, etc.
- **Non-Vent** goggles offer the best protection against liquids and dusts, but they do not breathe at all. We no longer stock these goggles.

## F. What Types of Faceshields Are Available?

- **Polycarbonate** – See A for benefits.
- **PETG** – Compared to polycarbonate, PETG is less expensive and more chemical-resistant, but less impact resistant. PETG offers poor scratch resistance.
- **Propionate** – Compared to polycarbonate, Propionate is less expensive and more chemical-resistant, but less impact resistant.
- **Acetate** – Compared to polycarbonate, Acetate is about the same price and more chemical-resistant, but less impact resistant.
- **Steel Screen Mesh or Wire Mesh** – Mesh is very breathable and durable for flying debris. Mesh is not appropriate for any chemical splash or fine dust. It is most commonly used by landscapers, foresters, agriculture, saw mills, etc.

## 3. Product Reference

### A. Safety Glasses

- Eyeglass cleaner
- Eyeglass cords/straps
- Prescription inserts (available for North Lightning and Uvex XC Safety Glasses and from other manufacturers)
- Faceshields, if chemical splash exists

## **B. Goggles**

- Encourage the use of an anti-fog lens if there's a possibility of high humidity, heat, or cold

## **C. Faceshields**

- Safety glasses are required under faceshields at all times
- Peel-away windows can be created using certain full face respirator lens protectors
- Faceshields with chin protectors are available from many manufacturers (for added splash/debris protection under the chin area)
- Faceshields can be attached to hard hats with special brackets

[Back to Top of Page](#)