



# Laser Eyewear Fact Sheet

The proper selection of laser eye protection is critical to the safety of the Laser User (LU) / Laser Operators (LO). Laser Eye Protection (LEP) is required whenever persons are within the nominal hazard zone (NHZ). The NHZ is considered the entry area where the maximum permissible exposure (MPE) limit is exceeded. In most research laboratories, this zone is defined as the area beyond the protective entryway, but maybe smaller if the beam path is clearly defined and contained. During maintenance and alignment procedures, the nominal hazard zone is considered the entire laboratory area.

## Factors in selecting appropriate eyewear

- Laser power and /or pulse energy.
- Wavelength(s) of laser output.
- Potential for multi-wavelength operation.
- Radiant exposure or irradiance levels for which protection (worst case) is required.
- Exposure time criteria.
- Maximum permissible exposure.
- Optical density requirement of eyewear filters at laser output wavelength.
- Angular dependence of protection afforded.
- Visible light transmission requirement and assessment of the effect of the eyewear on the ability to perform tasks while wearing the eyewear.
- Need for side-shield protection and maximum peripheral vision requirement.
- Radiant exposure or irradiance and the corresponding time factors at which laser safety filter characteristics change occurs, including transient bleaching especially for ultra-short pulse lengths.
- Need for prescription glasses.
- Comfort and fit. No gaps and snug to face.
- Degradation of filter media, such as photo bleaching.
- Strength of materials (resistance to mechanical trauma and shock).
- Capability of the front surface to produce a hazardous specular reflection.
- Requirement for anti-fogging design or coatings.
- All eyewear must be clearly labeled with optical density and wavelength.

## Care

- LEP should be cleaned after each use, this is particularly important when LEP is shared, as it will prevent sharing problems with each other. Always follow the manufacturers' instructions when cleaning laser safety eyewear. Use care when cleaning eyewear to avoid damage to absorbing filters or reflecting surfaces.

## Storage

- LEP should be stored in clean and sanitary "ready for use" condition in a location that is free from dirt, dust, and other contaminants.
- LEP must be stored in a location that is protected from the nominal hazard zone (NHZ) and easily accessible to unprotected personnel. LEP storage must be located at the immediate entrance, either outside or inside the laser laboratory in a protected zone.

## Inspection

- Clean the LEP if not already clean.
- Check for any cracking, crazing, pitting, and discoloration of the central lens area.
- Check the mechanical integrity of the frame, no broken or cracked parts.
- Make sure that all markings are legible.
- Broken laser eyewear should immediately be disposed in the trash.

**Emergency Contacts**  
**Dial 911 (campus phone)**  
**704-687-2200 (external phone)**