**Laser Eye Protection**

The information below should be helpful in selecting appropriate Laser Eye Protection (LEP). If you have additional questions on laser protective eyewear or any other laser safety issue, please contact EHS at 865-6391.

* Precautions:
  + Even if you are wearing LEP, **never look directly into any laser beam.** LEP is designed to protect the wearer from an accidental short exposure.
  + Intrabeam viewing of lasers is not allowed except with the direct permission of the Laser Safety Officer. Contact the Laser Safety Officer if you feel that aligning your laser requires intrabeam viewing.
* The SOP for each laser will indicate if laser eye protection is required for alignment or use of the laser.
  + If the SOP indicates LEP is only required for alignment procedures, then it is not required to be worn during normal use
  + If the SOP indicates the need for LEP in both alignment and during normal use, please select the appropriate LEP for the use with the greatest hazard
  + The SOP shall specify what OD (optical density) is required for the wavelength(s) being used
* Optical Density
  + The OD specified is the minimum OD needed to protect the user against a momentary intrabeam or specular reflection exposure.
  + However, if the laser protective eyewear has an OD much larger than the specified minimum OD, it may be impossible to properly see in the laser-controlled area
    - Generally, a higher OD means a lower Visible Light Transmission (VLT). The lower the VLT, the harder it is to see ambient light.
    - EHS recommends a VLT of at least 25%. Laser protective eyewear with a low VLT will generally not be worn by users or will create new hazards such as tripping or incorrect use of lab equipment
  + The OD for the LEP should always be chosen to see both the aligning beam and the light indicator for the laser being on
    - In almost all cases the power indicator and the alignment beam on the laser system is designed to have a different wavelength than the beam itself
  + For visible lasers it is not recommended to obtain LEP where the OD is higher than required (even if the VLT is acceptable). It is usually a good idea to be able to see any stray beams or reflections if they exist.
  + For invisible lasers the laser protective eyewear should be chosen to allow the wavelength produced by the viewing aid to be transmitted while absorbing the invisible beam. For example: a laser at 1064 nm is being aligned with the use of an IR sensing card which absorbs some of the 1064 nm radiation and emits radiation at 550 nm. The calculated intrabeam OD for the laser 6. A good choice of LEP would be a goggle with an OD of 7+ at 1064 nm and an OD of less than 1 at 400 to 700 nm. NOTE: this eyewear would not be a good choice if the Nd:YAG beam was frequency doubled to 532 nm.
  + Simple OD calculators can be found online, or you may contact the LSO for help on selecting the appropriate LEP
* Be certain to have enough LEP for everyone who could possibly be in the lab when the laser is active at the same time. For example: if a laser lab has 10 trained and qualified laser users, but no more than 4 will ever be working in the lab at the same time only 4 goggles are needed for the lab. However, if guests are expected in the lab be sure to acquire extra LEP.