

4123:1-5-27 Lasers.

(A) Labeling of laser equipment.

The employer shall furnish equipment provided with labels containing the following minimum information for continuous-wave (CW) lasers:

- (1) Wavelength or wavelength range;
- (2) Emergent beam size;
- (3) Beam divergence;
- (4) Maximum average power output;
- (5) Maximum emergency beam irradiance;
- (6) Manufacturer's name and address;
- (7) Product identification number.

(B) Posting.

The employer shall post notices in prominent locations in which lasers are being operated. (For examples see appendix to this rule.)

- (C) Beam shutters or caps shall be utilized, or the laser turned off, when laser transmission is not actually required. When the laser is left unattended for a substantial period of time, such as during lunch hour, overnight, or at change of shifts, the laser shall be turned off.

(D) Atmospheric conditions.

The employer shall require the employee to keep away from the source, range, and target of the laser when there is exposure to rain or snow or when there is dust or fog in the air.

(E) Laser protection.

- (1) Employees whose occupation or assignment requires exposure to laser beams shall be furnished suitable laser safety goggles which will protect for the specific wavelength of the laser and be of optical density (O.D.) adequate for the energy involved. The table below lists the maximum power or energy density for which adequate protection is afforded by glasses of optical densities from five through eight.

Selecting laser safety glass

Intensity, CW maximum power density (watts/cm ²)	Attenuation	
	Optical density (O.D.)	Attenuation factor
10 ²	5	10 ⁵
10 ¹	6	10 ⁶
1.0	7	10 ⁷
10.0	8	10 ⁸

Output levels falling between lines in this table shall require the higher optical density.

(2) Label of eye protection.

(a) Output levels falling between lines in this table shall require the higher optical density.

(b) All protective goggles shall bear a label identifying the following data:

- (i) The laser wavelengths for which use is intended;
- (ii) The optical density of those wavelengths;
- (iii) The visible light transmission.

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