

**WAC 296-32-22576 Optical communications systems (laser). (1)**

Laser radiation permissible exposure limits.

(2) All lasers and laser systems must be classified in accordance with the Federal Laser Product Performance Standards (21 C.F.R. 1040.10) or, in accordance with ANSI Z136.2-2012 and ANSI Z136.1-2014.

(a) Class I laser systems that are considered to be incapable of producing damaging radiation levels during operation and are thereby exempt from control measures or other forms of surveillance.

(b) Class 1M laser systems that are considered to be incapable of producing hazardous exposure conditions during normal operations unless the beam is viewed with an optical instrument such as eye-loupe (diverging beam) or telescope (collimated beam) and are, thereby exempt from other forms of surveillance.

(c) Class II laser systems emit in the visible portion of the spectrum (0.4  $\mu\text{m}$  to 0.7  $\mu\text{m}$ ) and eye protection is normally afforded by aversion responses, including the blink reflex. There is some possibility of injury if stared at.

(d) Class IIM laser systems emit in the visible portion of the spectrum (0.4  $\mu\text{m}$  to 0.7  $\mu\text{m}$ ) and eye protection is normally afforded by aversion responses (blink reflex) for unaided viewing, but are potentially hazardous if viewed with certain optical aids.

(e) Class IIIR laser systems have reduced product safety requirements and represent a transitional zone between safe and hazardous laser products.

(f) Class IIIB laser systems may be hazardous under direct and specular reflection viewing conditions, but the diffuse reflection is usually not a hazard. Class IIIB laser systems are normally not a fire hazard.

(g) Class IV (high power) laser systems are hazardous to the eye and skin from the direct beam, and sometimes from a diffuse reflection, and can also be a fire hazard. Class IV systems require the use of controls that prevent exposure of the eye and skin to specular or diffuse reflections of the beam.

(3) You must have a laser safety officer for installation and maintenance of all Class IIIB or Class IV laser systems.

(4) Warning signs and classification labels must be prepared in accordance with 21 C.F.R. 1040.10 when classifying lasers and laser systems, and ANSI Z136.1-2014 when using classified lasers and laser systems. All signs and labels must be conspicuously displayed.

(a) The signal word "CAUTION" must be used with all signs and labels associated with Class II and Class IIIR lasers and laser systems.

(b) The signal word "DANGER" must be used with all signs and labels associated with Class IIIB and Class IV lasers and laser systems.

(5) Personal protective equipment must be provided at no cost to the employee and must be worn whenever operational conditions or maintenance of lasers may result in a potentially hazardous exposure.

(a) Protective eyewear must be specifically designed for protection against radiation of the wavelength and radiant energy of the laser or laser system. Ocular exposure must not exceed the limits in ANSI Z136.1-2014 and ANSI Z136.2-2012.

(b) For Class IV lasers and laser systems protective eyewear must be worn for all operational conditions or maintenance which may result in exposures to laser radiation.

(6) You must establish control of hazardous laser radiation energy prior to work on Class IIIB or Class IV laser equipment. Controls may include, but are not limited to: Protective housings, interlocks,

optical system attenuators, enclosed beam paths, beam stops, and emission delays with audible warnings.

**Note:** See WAC 296-32-22578 Control of hazardous energy for additional requirements.

(7) All employees who may be exposed to laser radiation must receive laser safety training. The training must ensure that the employees are knowledgeable of the potential hazards and control measures for the laser equipment in use.

(8) Fiber splicing.

(a) Employees must wear safety glasses with side shields or goggles while splicing fiber.

(b) Food and beverages are prohibited in the work area of fiber splicing operations.

(c) Employees must place all cut fiber pieces in a safe place.

(d) Smoking and open flames are prohibited in the work area of fiber splicing operations when using flammable chemicals.

(e) The work area must be well ventilated when using cleaning chemicals and adhesives during fiber splicing/repair operations or where the potential of other hazardous atmospheres exists. Use air monitoring equipment to ensure the work area is adequately ventilated.

(f) Looking directly into the end of fiber cables is prohibited (especially with a microscope) until you are positive that there is no light source at the other end.

(g) You must have safety data sheets (SDSs) readily available during all fiber splicing operations (see chapter 296-901 WAC).

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 20-20-109, § 296-32-22576, filed 10/6/20, effective 11/6/20. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 17-20-069, § 296-32-22576, filed 10/2/17, effective 1/1/18.]