

Laser Safety

Your Safety  
Matters To Us



## What is Laser Safety?

Laser safety is the safe design, use and implementation of lasers to minimize the risk of laser accidents, especially those involving eye injuries. Since even relatively small amounts of laser light can lead to permanent eye injuries, the sale and usage of lasers is typically subject to government regulations.

Moderate and high-power lasers are potentially hazardous because they can burn the retina of the eye, or even the skin. To control the risk of injury, regulations are imposed upon manufacturers required safety measures, such as labelling lasers with specific warnings, and wearing safety goggles when operating lasers.

## Hazards of Laser Light

Laser beams can be hazardous, particularly for the eye (and sometimes also for the skin), mostly because they have high optical intensities even after propagation over relatively long distances. Even when the intensity at the entrance of the eye is moderate, laser radiation can be focused by the eye's lens to a small spot on the retina, where it can cause serious permanent damage within fractions of a second – even when the power level is only a few milliwatts.

Damage can result from both thermal and photochemical effects. Laser damage of the eye is not always immediately noticed, it is possible to burn the peripheral regions of the retina, causing blind spots which may be noticed only years later.



## Safety Glass



TRUMPF laser cutting machines are also equipped with professional safety glass of "Optical Density" (OD) 6, which offers top protection, and the residual laser is only 0.0001%.

## Enclosed Design for Laser Cutting Machines

The individual modules of TRUMPF laser cutting machines are enclosed by an enclosure and it is equipped with an electronically monitored door. The enclosure protects the operator from laser radiation and rapid movements of the machine axis.

Apart from preventing the laser from escaping, the enclosure also creates a closed environment to improve dust extraction efficiency, the dusts produced during laser cutting are smaller than 1 micron in diameter, thus TRUMPF fiber laser machines are equipped with high standard dust extractor, and the remaining emission in the air after laser cutting is less than  $0.1\text{mg}/\text{m}^3$ .

