

# A Product Guide to Laser Safety

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# **A Product Guide to Laser Safety**

Objective:

Enhance understanding of laser safety issues through familiarization with laser safety products.

Laser Safety Officers are concerned with “bioeffects”...

- We need to protect:
  - Eyes
  - Skin
  - Respiratory Tract

...but we can not ignore “traditional” safe work practices:

- Trip and Fall Hazards
- Electrical Hazards
- General Housekeeping

## Six Product Categories in Laser Safety

1. Laser Filters
2. Barriers
3. Control Systems
4. Alignment and Detection Tools
5. Air Filtration
6. Resources

## Six Product Categories in Laser Safety

### 1. Laser Filters



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- ✓ Eyewear
- ✓ Glass Sheet
- ✓ Acrylic Sheet
- ✓ Polycarbonate Sheet
- ✓ Films

## Eyewear Selection Criteria

- Wavelength (sometimes several !)
  - Optical Density Requirements
  - Overall Visible Light Transmission
  - Glass or Polycarbonate?
  - Style
  - Fit
  - Color Visibility
- 
- Also...field of view, fogging, impact resistance

Laser viewing acrylic is available for most applications.





## Six Product Categories in Laser Safety

1. Laser Filters

### **2. Barriers**

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Detection Tools

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✓ Curtains

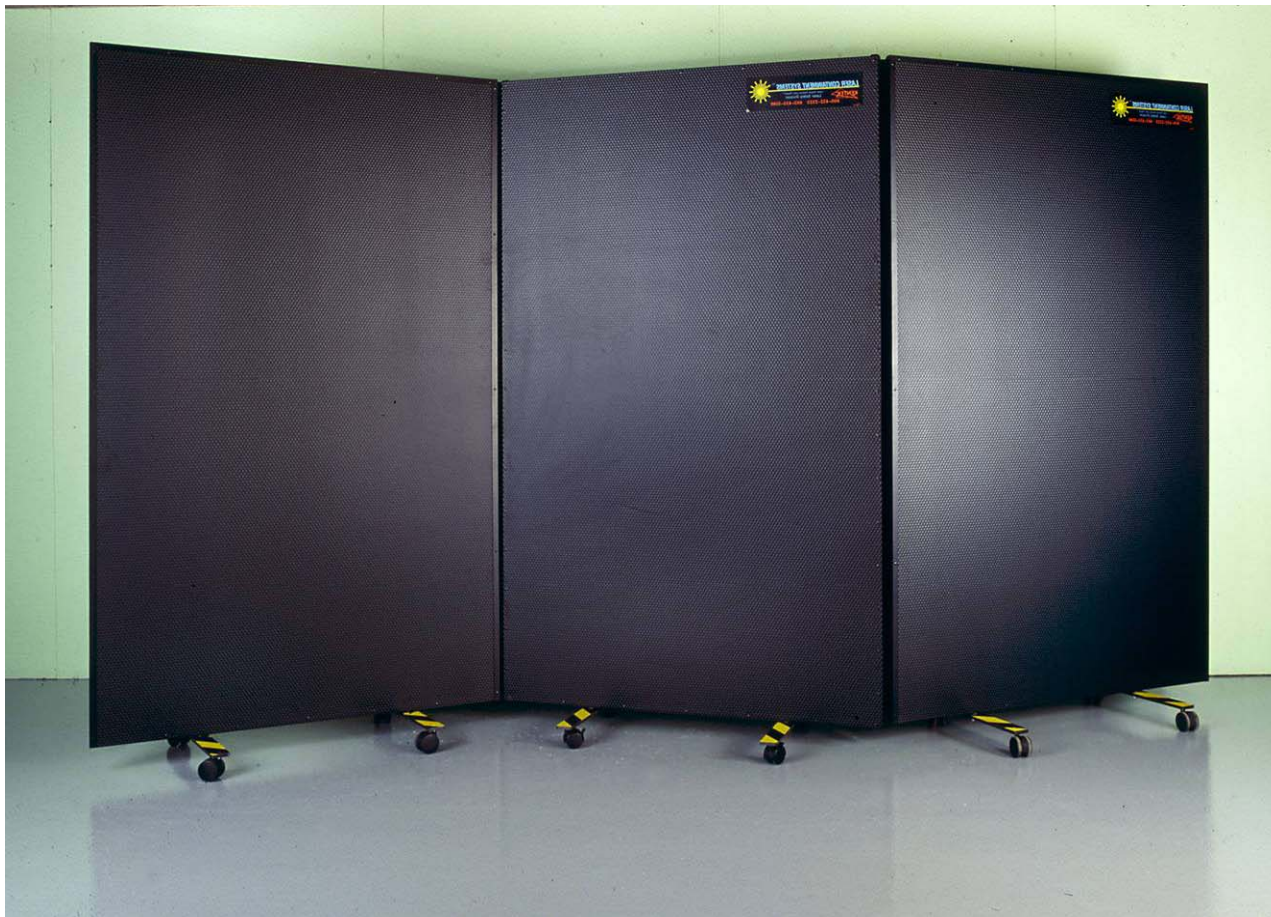
✓ Screens

✓ Enclosures

✓ Walls and Doors

✓ Beam Dumps & Stops

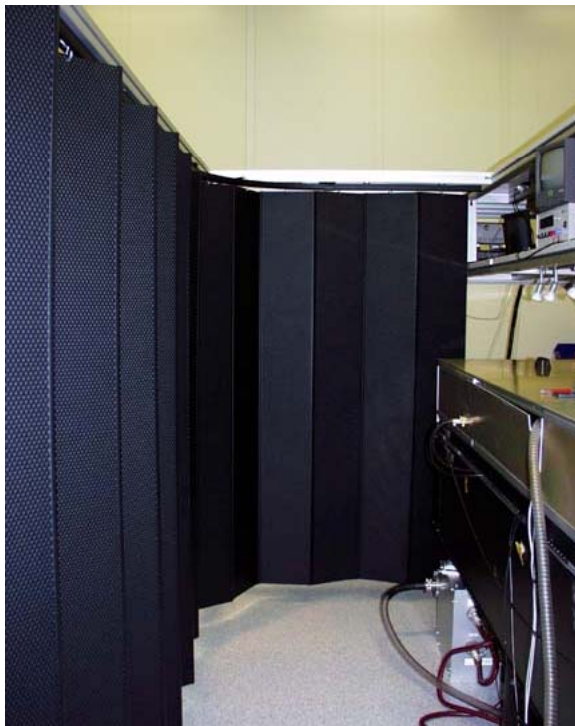
Laser safe barriers can be used for both temporary and permanent installations.



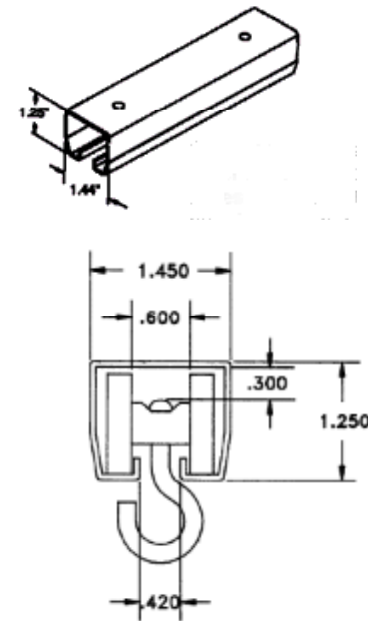
## Laser Safety Products

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Carefully engineered laser safety curtains will minimize gaps and guarantee hassle-free performance.



This is an  
all-metal  
curtain!



## Laser Safety Products

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Research-based LSOs should consider “curbs” for optical tables.





Beam dumps come in different sizes and can be either air- or water-cooled.



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### **3. Control Systems**



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✓ Signs

✓ Labels

✓ Interlocks

✓ Activation Systems

✓ Warning Systems

## Laser Safety Products

What's your sign? See ANSI Z136.1 for guidance.



**! DANGER**

**INVISIBLE LASER RADIATION**

**AVOID EYE OR SKIN EXPOSURE  
TO DIRECT OR SCATTERED RADIATION**

**LASER PROTECTIVE EYEWEAR REQUIRED**



**30W MAX, CW, 808nm**

152145\_1

**CLASS 4 LASER PRODUCT**

## Laser Safety Products

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Room Entry and Safety Interlock Systems have many options.

***Main Control Panel***

***Multi-Position Switch***



***Keypad for Door Entry***



***Single Function Switches***



***Magnetic Door Lock***



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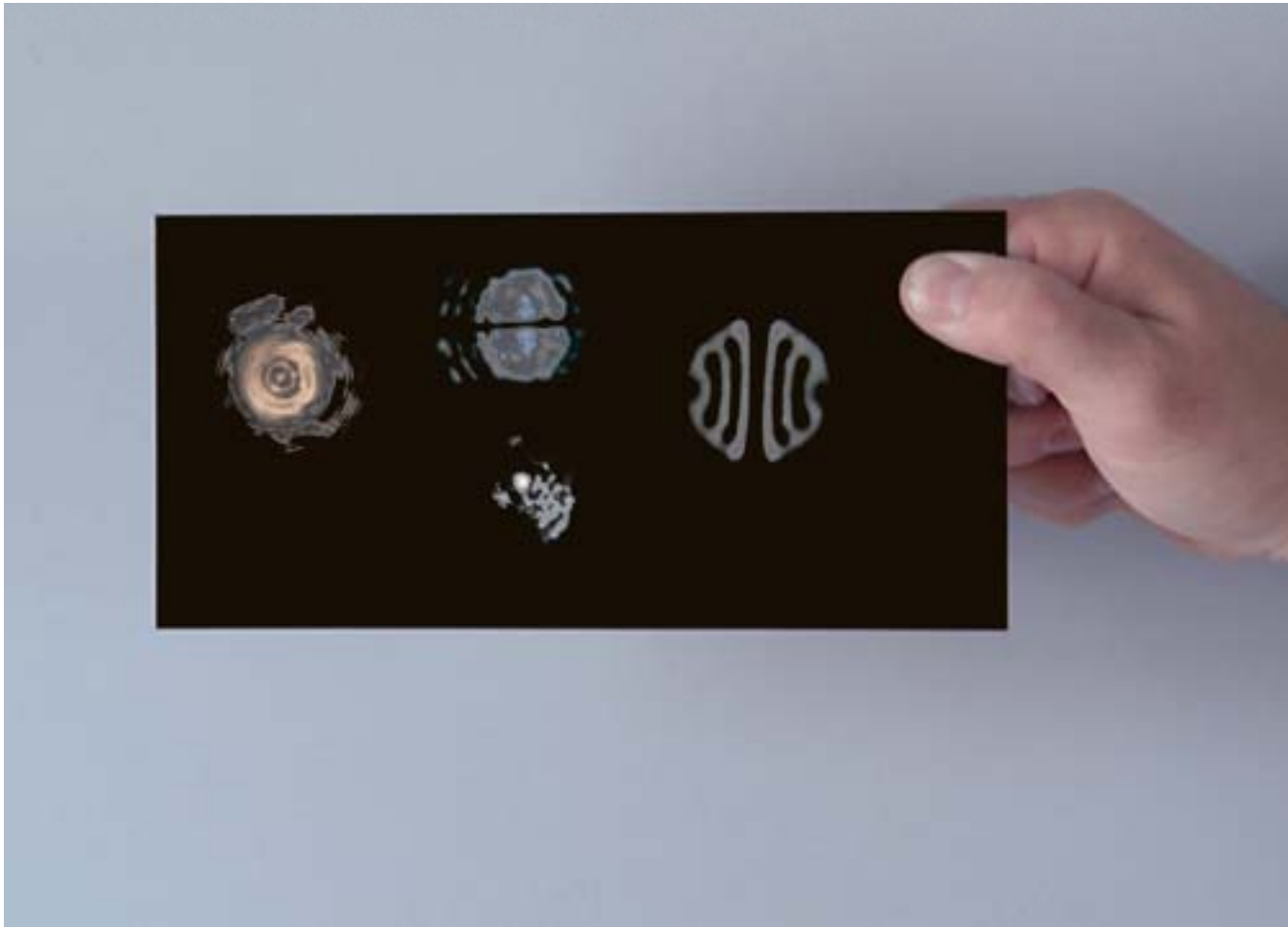
### **4. Alignment and Detection Tools**



5. Air Filtration
6. Resources

- ✓ Burn Paper
- ✓ Phosphor Screens, Cards and Disks
- ✓ Ceramic Sensors
- ✓ Power Meters
- ✓ Camera-type Viewers

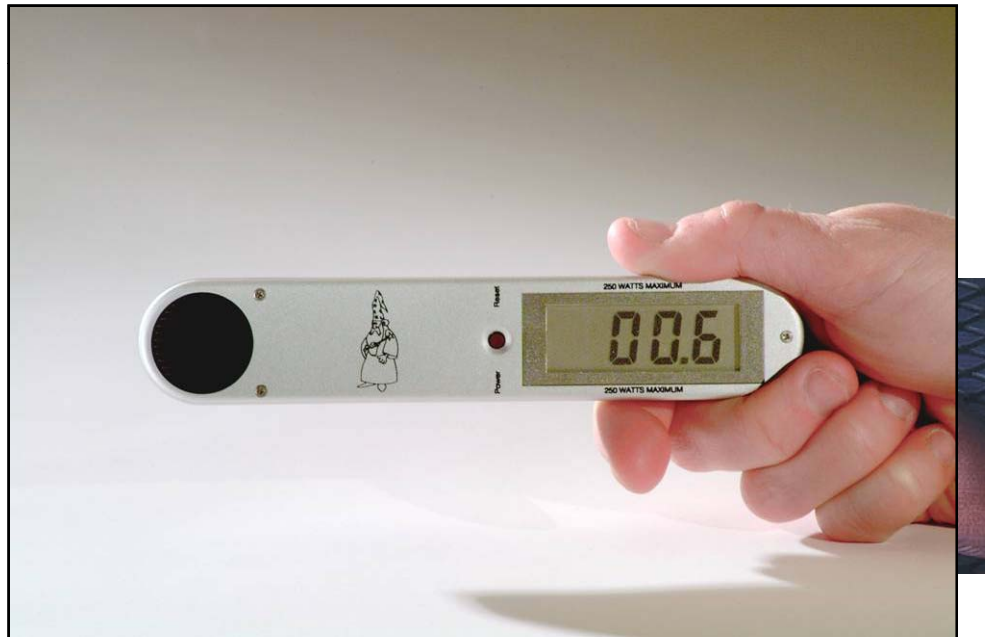
Alignment paper aids in beam profiling.



Ceramic viewers enable constant and repeated viewing of UV and IR laser beams.



Some power meters feature digital readouts and portable designs.



The ElectroViewer from ElectroPhysics is a useful tool for locating IR laser beams.



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- ✓ Two families:
  - Built-in
  - Modular

Fume extraction equipment should be considered for all laser materials processing applications.

### Three Issues of Laser Fumes:

- Health issues (LGACs – Laser Generated Airborne Contaminants)
- Laser efficiency - effects on the laser optics
- Product contamination - effects on the products being lased



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### **6. Resources**



- ✓ Books
- ✓ Videos
- ✓ Software