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LPCE375/M - May 21, 2025

Item # LPCE375/M was discontinued on May 21, 2025. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

LASER SAFETY FABRIC PANELS FOR OPTICAL ENCLOSURES

- Replace Optical Enclosure Panels with Laser Safety Fabric
- Flame Retardant and Certified to EN Specifications
- Easily Access Enclosure Interior After Installing

LPCE21
For 21" x 12" Enclosure Side

LPCE15
For 15" x 12" Enclosure Side

LPCE9
For 9" x 12" Enclosure Side

Application Idea
Each fabric panel replaces one side of an optical enclosure. The panels can also be used in custom-built enclosures.

Hide Overview

OVERVIEW

Features

- Flame Retardant
- Certified to EN 12254: 2010(E)*
- Sized to Fit Stock Optical Enclosures
- Fastener Kits Attach Panels to 25 mm Rails
- 1.6 mm Typical Fabric Thickness
- For Custom Sizes, Contact Tech Support

These laser safety fabric panels are designed to replace the side panels of our optical enclosures. Using the fasteners sold separately below, the panels can be attached to the 25 mm rails that make up the enclosure frame. The eyelets on the fabric panels are positioned to align with the channels on the sides of the rails. The table to the right shows compatible stock enclosures for each size panel. If building a custom enclosure using 25 mm rails, please see the complete drawings by clicking on the red Docs icon ( ) below.

Fabric Panel Item #	Dimensions	Compatible Enclosures
LPCE9	10.96" x 12.99"	XE25C7 XE25C8
LPCE15	16.97" x 12.99"	XE25C7 XE25C9
LPCE21	22.97" x 12.99"	XE25C8 XE25C9
LPCE225/M	275.0 mm x 325.0 mm	XE25C7/M XE25C8/M
LPCE375/M	425.0 mm x 325.0 mm	XE25C7/M XE25C9/M
LPCE525/M	575.0 mm x 325.0 mm	XE25C8/M XE25C9/M

Thorlabs' laser safety fabric is designed to withstand high laser energy up to EN 12254: 2010(E) certification. The laser rated material is made of a rubber compound fabric, which is the same material used to make our laser safety fabric and laser safety curtains.

For instructions on attaching a fabric panel to an enclosure, please refer to the manual.

***DISCLAIMER**

This laser safety fabric has been tested by a third party using EN specifications; see the *Certifications* tab above for details. Due to manufacturing variances, mechanical wear, and laser damage, Thorlabs assumes no responsibility for laser material failure. Please consult your local laser safety specialist before purchasing to ensure that the fabric is suitable for your application. To minimize risk, inspect the material before each use and ensure that it is in excellent condition.

Hide Certifications

CERTIFICATIONS

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EN Certification[a]				
Certification Requirements	**Test Parameters**	**Damage Threshold**	**Maximum Spectral Transmittance Ratio**	**Certification Level[a]**
EN 12254: 2010 (E), 180 - 315 nm Range	266 nm, 3 ns Pulses (FWHM), 50 kHz	1×10^{7} W/m^2	1×10^{-10}	D AB10
EN 12254: 2010 (E), 180 - 315 nm Range	266 nm, 240 ms Pulses (FWHM), 10 Hz	3×10^{6} J/m^2	1×10^{-5}	I AB5
EN 12254: 2010 (E), 180 - 315 nm Range	266 nm, 5 ns Pulses (FWHM), 10 Hz	3×10^{5} J/m^2	1×10^{-4}	R AB4
EN 12254: 2010 (E), 180 - 315 nm Range	266 nm, 500 ps Pulses (FWHM), 20 Hz	3×10^{14} J/m^2	1×10^{-4}	M AB2
EN 12254: 2010 (E), 315 - 1050 nm Range	532 nm (CW)	1×10^{7} W/m^2	1×10^{-7}	D AB7
EN 12254: 2010 (E), 315 - 1400 nm Range	1064 nm, 2 ms Pulses (Square), 20 Hz	5×10^{3} J/m^2	1×10^{-6}	R AB7
EN 12254: 2010 (E), 315 - 1400 nm Range	1064 nm, 300 µs Pulses (Square), 20 Hz	5×10^{5} J/m^2	1×10^{-8}	I AB8
EN 12254: 2010 (E), 315 - 1400 nm Range	1064 nm / 532 nm, 500 ps / 400 ps Pulses (Square), 20 Hz	1.5×10^{4} J/m^2	1×10^{-8}	M AB8
EN 12254: 2010 (E), 1050 - 1400 nm Range	1070 nm (CW)	2.5×10^{6} W/m^2	1×10^{-5}	D AB5
EN 12254: 2010 (E), 1400 - 10 600 nm Range	10.6 µm (CW)	1×10^{7} W/m^2	1×10^{-4}	D AB3
EN 12254: 2010 (E), 1400 - 10 600 nm Range	10.6 µm, 3 ms Pulses (Square), 10 Hz	1×10^{7} J/m^2	1×10^{-5}	I AB4
EN 12254: 2010 (E), 1400 - 10 600 nm Range	10.6 µm, 100 ns Pulses (Square), 1 Hz	1×10^{4} J/m^2	1×10^{-2}	R AB2

a. These certification levels are reproduced from EN 12254: 2010(E).

Other EN Certifications[a]			
Certification Type	**Test Wavelength**	**Pulsewidth (FWHM)**	**Comments**
Mechanical Strength	N/A	N/A	UV-Exposed Protected Fabric. All samples meet requirement.
Resistance to Ignition	N/A	N/A	Flame does not reach the test mark with the burner in position, and self-extinguishes after removal of the burner. Material does not continue to glow for more than one second after removal of the burner.
Spectral Transmittance	200 nm - 50 000 nm	N/A	Samples do not exhibit transmission windows from 200 nm to 50 000 nm.
Stability to Temperature	Various	Various	No degradation was observed in any AB level for any sample.
Stability to UV Radiation	All	10 ns - 20 ns	Samples do not exhibit any cracking, peeling, or degradation. For laser wavelengths, samples do not exceed maximum spectral transmission for scale number. Samples maintained optical density using both laser and spectrophotometer.

a. These certification levels are reproduced from EN 12254: 2010(E).

Hide Laser Safety

LASER SAFETY

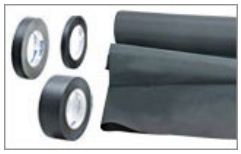
Laser Safety and Classification

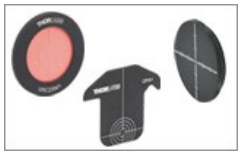
Safe practices and proper usage of safety equipment should be taken into consideration when operating lasers. The eye is susceptible to injury, even from very low

levels of laser light. Thorlabs offers a range of laser safety accessories that can be used to reduce the risk of accidents or injuries. Laser emission in the visible and near infrared spectral ranges has the greatest potential for retinal injury, as the cornea and lens are transparent to those wavelengths, and the lens can focus the laser energy onto the retina.

Safe Practices and Light Safety Accessories







- Laser safety eyewear must be worn whenever working with Class 3 or 4 lasers.
- Regardless of laser class, Thorlabs recommends the use of laser safety eyewear whenever working with laser beams with non-negligible powers, since metallic tools such as screwdrivers can accidentally redirect a beam.
- Laser goggles designed for specific wavelengths should be clearly available near laser setups to protect the wearer from unintentional laser reflections.
- Goggles are marked with the wavelength range over which protection is afforded and the minimum optical density within that range.
- Laser Safety Curtains and Laser Safety Fabric shield other parts of the lab from high energy lasers.
- Blackout Materials can prevent direct or reflected light from leaving the experimental setup area.
- Thorlabs' Enclosure Systems can be used to contain optical setups to isolate or minimize laser hazards.
- A fiber-pigtailed laser should always be turned off before connecting it to or disconnecting it from another fiber, especially when the laser is at power levels above 10 mW.
- All beams should be terminated at the edge of the table, and laboratory doors should be closed whenever a laser is in use.
- Do not place laser beams at eye level.
- Carry out experiments on an optical table such that all laser beams travel horizontally.
- Remove unnecessary reflective items such as reflective jewelry (e.g., rings, watches, etc.) while working near the beam path.
- Be aware that lenses and other optical devices may reflect a portion of the incident beam from the front or rear surface.
- Operate a laser at the minimum power necessary for any operation.
- If possible, reduce the output power of a laser during alignment procedures.
- Use beam shutters and filters to reduce the beam power.
- Post appropriate warning signs or labels near laser setups or rooms.
- Use a laser sign with a lightbox if operating Class 3R or 4 lasers (i.e., lasers requiring the use of a safety interlock).
- Do not use Laser Viewing Cards in place of a proper Beam Trap.

Laser Classification

Lasers are categorized into different classes according to their ability to cause eye and other damage. The International Electrotechnical Commission (IEC) is a global organization that prepares and publishes international standards for all electrical, electronic, and related technologies. The IEC document 60825-1 outlines the safety of laser products. A description of each class of laser is given below:

Class	Description	Warning Label
1	This class of laser is safe under all conditions of normal use, including use with optical instruments for intrabeam viewing. Lasers in this class do not emit radiation at levels that may cause injury during normal operation, and therefore the maximum permissible exposure (MPE) cannot be exceeded. Class 1 lasers can also include enclosed, high-power lasers where exposure to the radiation is not possible without opening or shutting down the laser.	
1M	Class 1M lasers are safe except when used in conjunction with optical components such as telescopes and microscopes. Lasers belonging to this class emit large-diameter or divergent beams, and the MPE cannot normally be exceeded unless focusing or imaging optics are used to narrow the beam. However, if the beam is refocused, the hazard may be increased and the class may be changed accordingly.	
2	Class 2 lasers, which are limited to 1 mW of visible continuous-wave radiation, are safe because the blink reflex will limit the exposure in the eye to 0.25 seconds. This category only applies to visible radiation (400 - 700 nm).	
2M	Because of the blink reflex, this class of laser is classified as safe as long as the beam is not viewed through optical instruments. This	

	laser class also applies to larger-diameter or diverging laser beams.	
3R	Class 3R lasers produce visible and invisible light that is hazardous under direct and specular-reflection viewing conditions. Eye injuries may occur if you directly view the beam, especially when using optical instruments. Lasers in this class are considered safe as long as they are handled with restricted beam viewing. The MPE can be exceeded with this class of laser; however, this presents a low risk level to injury. Visible, continuous-wave lasers in this class are limited to 5 mW of output power.	
3B	Class 3B lasers are hazardous to the eye if exposed directly. Diffuse reflections are usually not harmful, but may be when using higher-power Class 3B lasers. Safe handling of devices in this class includes wearing protective eyewear where direct viewing of the laser beam may occur. Lasers of this class must be equipped with a key switch and a safety interlock; moreover, laser safety signs should be used, such that the laser cannot be used without the safety light turning on. Laser products with power output near the upper range of Class 3B may also cause skin burns.	
4	This class of laser may cause damage to the skin, and also to the eye, even from the viewing of diffuse reflections. These hazards may also apply to indirect or non-specular reflections of the beam, even from apparently matte surfaces. Great care must be taken when handling these lasers. They also represent a fire risk, because they may ignite combustible material. Class 4 lasers must be equipped with a key switch and a safety interlock.	
All class 2 lasers (and higher) must display, in addition to the corresponding sign above, this triangular warning sign.		

Hide Laser Safety Curtain Panels for Optical Enclosures

Laser Safety Curtain Panels for Optical Enclosures

- Flame Retardant
- Certified to EN 12254: 2010(E) (See Disclaimer on *Overview* Tab Above)
- Attach to 25 mm Rails for Optical Enclosures
- Fasteners Sold Separately Below

These laser safety fabric panels are designed for the sides of our optical enclosures, as shown in the image to the right. Alternatively, the panels can be attached to custom-built enclosures using 25 mm rails. The table on the *Overview* tab above shows compatible enclosure sizes for each curtain panel; if building a custom enclosure using 25 mm rails, please see the complete drawings by clicking on the red Docs icon ( ) below.

Click to Enlarge
[APPLIST]
[APPLIST]
LPCE21 Panel Used to Replace One Hardboard Side of an Optical Enclosure. The thumbscrews can be easily removed in order to access the inside of the enclosure.

While the fabric panel attaches to the outside of the 25 mm rails, be sure to remove the included black hardboard, which fits inside the channels of the rails, from inside. Failure to do so could cause the hardboard to ignite if exposed to a high-power laser.

All imperial curtain panels are 12.99" tall and designed for an enclosure using vertical XE25L12 rails. All metric curtain panels are 325.0 mm tall and designed for an enclosure using vertical XE25L300/M rails.

If the sizes offered here are not suitable for your enclosure application, you can request custom sizes by contacting Tech Support.

The curtain panels can be attached to the 25 mm rails using the fasteners sold separately below.

Part Number	Description	Price	Availability
LPCE225/M	**Laser Safety Fabric Panel for 225 x 300 mm Enclosure Side**	**$79.04**	**Today**
LPCE375/M	**Laser Safety Fabric Panel for 375 x 300 mm Enclosure Side**	**$105.39**	**Today**
LPCE525/M	**Laser Safety Fabric Panel for 525 x 300 mm Enclosure Side**	**$121.86**	**2 Weeks**
LPCE9	**Laser Safety Fabric Panel for 9" x 12" Enclosure Side**	**$72.45**	**Today**
LPCE15	**Laser Safety Fabric Panel for 15" x 12" Enclosure Side**	**$114.17**	**Today**
LPCE21	**Laser Safety Fabric Panel for 21" x 12" Enclosure Side**	**$120.76**	**Today**

Hide Fasteners for Laser Safety Fabric Panels

Fasteners for Laser Safety Fabric Panels

Video

Attach Laser Safety Fabric Panels to 25 mm Rail Channels

- Each LPCEF(/M) Kit Includes:
  - Seven 8-32 (M4 x 0.7) Thumbscrews
  - Seven 8-32 (M4 x 0.7) T-Nuts
  - Seven 8-32 (M4 x 0.7) Setscrews
- Replacement 8-32 (M4 x 0.7) Thumbscrews Available [Item # LPCET(/M)]

689A Installing a Fabric Panel with LPCEF(/M) Hardware

The LPCEF(/M) fastener kit contains seven sets of thumbscrews, T-nuts, and setscrews. One fastener kit is enough to affix one laser safety fabric panel to the side of a compatible enclosure. Please see the manual for instructions.

The setscrews can be tightened using a 5/64" (2.0 mm) hex key or balldriver, while the thumbscrews do not have a hex socket.

Replacement thumbscrews for the fastener kit are also available in packs of 10.

Part Number	Description	Price	Availability
LPCEF/M	**Fastener Kit for Laser Safety Fabric Panels, M4 Threading**	**$46.10**	**Today**
LPCET/M	**M4 Thumbscrews, Qty. 10**	**$16.03**	**Today**
LPCEF	**Fastener Kit for Laser Safety Fabric Panels, 8-32 Threading**	**$46.10**	**Today**
LPCET	**8-32 Thumbscrews, Qty. 10**	**$16.03**	**Today**