

LaserMUX™ Beam Combining Filters



LaserMUX filters are designed to efficiently combine or separate multiple laser beams at a 45° angle of incidence. These dichroic laser beam combiners are optimized to multiplex (MUX) popular laser lines, and can also be used in reverse to demultiplex (DEMUX). The ultra-low autofluorescence filters are ideally suited for OEM multi-laser fluorescence imaging and measurement applications including laser microscopy and flow cytometry, as well as for myriad end-user applications in a laboratory environment.

With high reflection and transmission performance at popular laser lines, these filters allow combining multiple different laser beams with exceptionally low loss. LaserMUX filters are hard-coated and come in an industry-standard 25 mm diameter x 3.5 mm thick black-anodized aluminum ring with a generous 22 mm clear aperture. Custom-sized filters are available in a matter of days. Semrock also stocks a wide variety of other single-edge dichroic beamsplitters and multiedge dichroic beamsplitters.

Reflected Laser Wavelengths	Reflection Band	Transmission Laser Wavelengths	Passband	Size (Diameter x Thickness)	Filter Part Number	Price
375 ± 3 nm 405 +10/-5 nm	372.0 nm – 415.0 nm	440 +3/-1, 457.9, 473 +5/-0, 488 +3/-2, 514.5, 515, 532, 543.5, 561.4, 568.2, 594.1, 632.8, 635 +7/-0, 647.1 nm	439.0 nm – 647.1 nm	25 mm x 3.5 mm	LM01-427-25	\$235
440 +3/-1 nm 457.9 nm	439.0 nm – 457.9 nm	473 +5/-0, 488 +3/-2, 514.5, 515, 532, 543.5, 561.4, 568.2, 594.1, 632.8, 635 +7/-0, 647.1 nm	473.0 nm – 647.1 nm	25 mm x 3.5 mm	LM01-466-25	\$235
457.9 nm 473 nm	457.9 nm – 473.0 nm	488 +3/-0, 514.5, 515, 532, 543.5, 561.4, 568.2, 594.1, 632.8, 635 +7/-0, 647.1 nm	488.0 nm – 647.1 nm	25 mm x 3.5 mm	LM01-480-25	\$235
473 +5/-0 nm 488 +3/-2 nm 1064.2 nm	473.0 nm – 491.0 nm	514.5, 515, 532, 543.5, 561.4, 568.2, 594.1, 632.8, 635 +7/-0, 647.1 nm	514.5 nm – 647.1 nm	25 mm x 3.5 mm	LM01-503-25	\$235
514.5 nm 515 nm 532 nm 543.5 nm	514.5 nm – 543.5 nm	561.4, 568.2, 594.1, 632.8, 635 +7/-0, 647.1, 671, 676.4, 785 ± 5 nm	561.4 nm – 790.0 nm	25 mm x 3.5 mm	LM01-552-25	\$235
561.4 nm 568.2 nm 594.1 nm	561.4 nm – 594.1 nm	632.8, 635 +7/-0, 647.1, 671, 676.4, 785 ± 5 nm	632.8 nm – 790.0 nm	25 mm x 3.5 mm	LM01-613-25	\$235
632.8 nm 635 +7/-0 nm 647.1 nm	632.8 nm – 647.1 nm	671, 676.4, 785 ± 5 nm	671.0 nm – 790.0 nm	25 mm x 3.5 mm	LM01-659-25	\$235

LaserMUX Common Specifications

Property	Value	Comment
Absolute Reflection	> 99% (s-polarization) > 96% (p-polarization) > 98% (average polarization)	For reflected laser wavelengths
Average Reflection	> 98% (average polarization)	For reflection band
Absolute Transmission	> 94% (s-polarization) > 95% (p-polarization) > 95% (average polarization)	For transmitted laser wavelengths
Average Transmission	> 95% (average polarization)	For nominal passband
Angle of Incidence	45.0°	Based on a collimated beam of light
Performance for Non-collimated Light	The high-transmission portion of the long-wavelength edge and the low-transmission portion of the short-wavelength edge exhibit a small "blue shift" (shift toward shorter wavelengths). Even for cone half angles as large as 15° at normal incidence, the blue shift is only several nm.	
Clear Aperture	≥ 22 mm	For all optical specifications
Overall Mounted Diameter	25.0 mm + 0.0 / - 0.1 mm	Black anodized aluminium ring
Overall Mounted Thickness	3.5 mm + 0.0 +/- 0.1 mm	Black anodized aluminium ring
Unmounted Thickness	2.0 mm +/- 0.1mm	
Beam Deviation	< 30 arcseconds	Based on 20 arcsecond substrate wedge angle
Laser Damage Threshold	1 J/cm ² @ 532 nm (10 ns pulse width)	Tested for LM01-552 nm filter only (see page 102)