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THORLABS

TLV-QFXL-GFP - JUL 1, 2019

Item # TLV-QFXL-GFP was discontinued on JUL 1, 2019. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

MICROSCOPY FILTER CUBES WITH PRE-INSTALLED FLUORESCENCE FILTERS

- ▶ Pre-Installed Filters Minimize Handling of Bare Optics
- ▶ Drop-In Compatibility with Select Olympus and Nikon Microscopes
- ▶ Matched Filter Sets Designed for Wavelength Ranges of Common Fluorophores



TLV-U-MF2-CFP
 CFP Filter Cube for Olympus AX, BX2,
 and IX2 Microscopes

TLV-U-FF-GFP2

Alexa Fluor® 488 Filter Cube for
 Olympus BX3 and IX3 Microscopes



TLV-TE2000-TOM
 tdTomato Filter Cube for Nikon TE2000 and
 Eclipse Ti

TLV-QFXL-MCHA

mCherry-A Filter Cube for Nikon
 E200-1000 and TE200 Microscopes



OVERVIEW

Features

- Drop-in Filter Cubes with Pre-Installed Fluorescence Filter Sets for Select Nikon and Olympus Microscopes (See Table Below)
- Filters Optimized for Common Fluorophores (See Table to the Right)
- Pre-Installed Filters Minimize Handling of Bare Optics
- Durable Aluminum Filter Cube Body
- Side Labels for Marking Installed Filters



Click to Enlarge Thorlabs' filter cubes feature labels for identifying installed filters.

This page offers Thorlabs' microscope filter cubes with pre-installed fluorescence filter sets. Choose from 13 available imaging filter sets; each is optimized for a specific fluorophore (see table to the right for options). These filter sets can also be used with other fluorophores (see the *Fluorophores* tab for more information). Four filter cube body options are available for each filter set; they are compatible with select Olympus and Nikon fluorescence microscopes (see the table below for microscope compatibility).

Thorlabs also sells additional filters and imaging filter sets that are compatible with the cubes sold on this page. For users who already have imaging filter sets, we also provide empty microscope filter cube bodies. Pre-mounted filter cubes using any of our stock filters can be requested by contacting techsupport@thorlabs.com.

Filter Design

Our filters are manufactured to high-performance optical specifications and designed for durability. They are produced via multiple dielectric layers deposited on a high-precision, fused silica substrate. The substrate is ground and polished to ensure that the highest possible image quality is maintained. The resulting hard-coated optics consist of filter layers that are denser than those obtained from electron beam deposition techniques, and which reduce water absorption while greatly enhancing durability, stability, and performance of the filter. Each filter layer is monitored during growth to ensure minimal deviation from design specification thickness, ensuring overall high-quality filter performance.

Microscopy Filter Cubes

These cubes feature a spring plate retention mechanism for the dichroic mirror that results in lower optic stress for improved imaging. Our design also offers an all-aluminum cube body, simplified optic mounting, and three labels for writing information about installed filters. Each cube is also engraved with the empty cube item number. Refer to the table below to view which filter cubes are compatible with which microscope.

Although one filter set is pre-installed into each filter cube, users can easily swap the installed filters. The cubes are compatible with the following filters: one excitation filter (Ø25 mm, up to 5 mm thick), one emission filter (Ø25 mm, up to 3.5 mm thick), and one dichroic mirror (up to 25.2 mm x 36.0 mm x 1.1 mm). Optics can be mounted, aligned, and swapped out easily as illustrated in the video to the right. For detailed assembly instructions, please refer to the assembly manuals in the table below.

When these cubes are placed in a filter cube turret, it is important to balance the weight. To ensure longevity of a motorized filter cube turret and prevent unnecessary wear, please place filter cubes opposing each other to maintain balance.

Quick Links	
Fluorophore ^a	Excitation / Emission Wavelength
BFP	390 nm / 460 nm
CFP	434 nm / 479 nm
Wild Type GFP	445 nm / 510 nm
GFP	469 nm / 525 nm
FITC	475 nm / 530 nm
Alexa Fluor [®] 488	482 nm / 520 nm
YFP	497 nm / 535 nm
tdTomato	531 nm / 593 nm
TRITC	542 nm / 620 nm
Texas Red	559 nm / 630 nm
mCherry	562 nm / 641 nm
Cyanine (Cy3.5)	565 nm / 620 nm
mCherry	578 nm / 641 nm

- Filter sets are optimized for the listed fluorophore. For alternative fluorophore compatibility information, see the *Fluorophores* tab.

Microscope Compatibility of Filter Cubes ^a			
Item # Prefix (Empty Cube Item #)	Microscope Manufacturer	Compatible Microscopes	Assembly Manual
TLV-U-MF2	Olympus	AX, BX2, and IX2 Series	TLV-U-MF2 Manual
TLV-U-FF	Olympus	BX3 and IX3 Series	TLV-U-FF Manual
TLV-QFXL	Nikon	E200, E400, E600, E800, E1000, TS100, TS100F, TE200, TE300, ME600L, L150A Scopes	TLV-QFXL Manual
TLV-TE2000	Nikon	TE2000, 50i, 55i, 80i, 90i, Eclipse Ti, and Epi-Fluor Illuminator Scopes	TLV-TE2000 Manual


- Thorlabs does not guarantee compatibility with other industry-standard microscopes not mentioned on this webpage.

FILTER SPECS

Specification	Excitation Filters		Emission Filters		Dichroic Filters
	MDF-GFP2, MDF-TOM, MDF-MCHC, & MDF-MCHA Sets	All Other Excitation Filters	MDF-GFP2, MDF-TOM, MDF-MCHC, & MDF-MCHA Sets	All Other Excitation Filters	Dichroics in MDF-GFP2, MDF-MCHA, MDF-MCHC, & MDF-TOM Sets
Size	Ø25 +0.0/-0.1 mm	Ø25 ± 0.1 mm	Ø25 +0.0/-0.1 mm	Ø25 ± 0.1 mm	25.2 mm x 35.6 mm
Clear Aperture	>Ø21 mm		>Ø22 mm	>Ø21 mm	80% of Area
Angle of Incidence	0° ± 5°				45° ± 1.5°
Thickness	5.0 ± 0.1 mm		3.5 ± 0.1 mm		1.05 ± 0.05 mm
Surface Quality	60-40 Scratch-Dig				
Substrate	Fused Silica				

Filter Set Item #	Fluorophore	Filter Type	Center Wavelength	FWHM	Reflection Band	Transmission Band	AR Coating ^a	Transmission Data ^b
MDF-BFP	BFP	Excitation	390 nm	18 nm	-	-	-	
		Emission	460 nm	60 nm	-	-	-	
		Dichroic	-	-	360 - 407 nm	425 - 575 nm	R _{abs} < 2% from 400 to 800 nm	
MDF-CFP	CFP	Excitation	434 nm	17 nm	-	-	-	
		Emission	479 nm	40 nm	-	-	-	
		Dichroic	-	-	423 - 445 nm	460 - 610 nm	R _{abs} < 2% from 400 to 800 nm	
MDF-WGFP	Wild Type GFP	Excitation	445 nm	45 nm	-	-	-	
		Emission	510 nm	42 nm	-	-	-	
		Dichroic	-	-	415 - 470 nm	490 - 720 nm	R _{abs} < 2% from 400 to 800 nm	
MDF-GFP	GFP	Excitation	469 nm	35 nm	-	-	-	
		Emission	525 nm	39 nm	-	-	-	
		Dichroic	-	-	452 - 490 nm	505 - 800 nm	R _{abs} < 2% from 400 to 800 nm	
MDF-FITC	FITC	Excitation	475 nm	17.5 nm	-	-	-	
		Emission	530 nm	21.5 nm	-	-	-	
		Dichroic	-	-	470 - 490 nm	508 - 675 nm	R _{abs} < 2% from 400 to 800 nm	
MDF-GFP2	GFP Alexa Fluor® 488	Excitation	482 nm	18 nm	-	-	-	
		Emission	520 nm	28 nm	-	-	-	
		Dichroic	-	-	350 - 488 nm	502 - 950 nm	-	
MDF-YFP	YFP	Excitation	497 nm	8 nm	-	-	-	
		Emission	535 nm	11 nm	-	-	-	
		Dichroic	-	-	490 - 510 nm	520 - 700 nm	-	
MDF-TOM	tdTomato	Excitation	531 nm	40 nm	-	-	-	
		Emission	593 nm	40 nm	-	-	-	
		Dichroic	-	-	350 - 555 nm	569 - 950 nm	-	
MDF-TRITC	TRITC	Excitation	542 nm	20 nm	-	-	-	
		Emission	620 nm	52 nm	-	-	-	
		Dichroic	-	-	525 - 556 nm	580 - 650 nm	R _{abs} < 2% from 400 to 800 nm	
MDF-TXRED	Texas Red	Excitation	559 nm	34 nm	-	-	-	
		Emission	630 nm	69 nm	-	-	-	
		Dichroic	-	-	533 - 580 nm	595 - 800 nm	R _{abs} < 2% from 400 to 800 nm	
MDF-MCHC	mCherry	Excitation	562 nm	40 nm	-	-	-	
		Emission	641 nm	75 nm	-	-	-	
		Dichroic	-	-	350 - 585 nm	601 - 950 nm	-	
MDF-CY3.5	Cyanine (CY3.5)	Excitation	565 nm	24 nm	-	-	-	
		Emission	620 nm	52 nm	-	-	-	
		Dichroic	-	-	533 - 580 nm	595 - 800 nm	R _{abs} < 2% from 400 to 800 nm	
MDF-MCHA	mCherry	Excitation	578 nm	21 nm	-	-	-	
		Emission	641 nm	75 nm	-	-	-	

Filter Set Item #	Fluorophore	Filter Type	Center Wavelength	FWHM	Reflection Band	Transmission Band	AR Coating ^a	Transmission Data ^b
		Dichroic	-	-	350 - 588 nm	603 - 950 nm	-	

- Select dichroics have an AR coating designed for 45° AOI on the back surface.
- Click on  for a plot and downloadable data.

FLUORESCENCE TUTORIAL

Filters for Fluorescence Microscopy

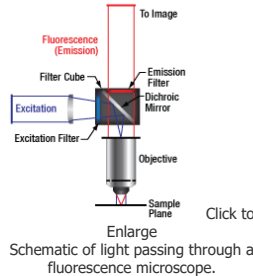
Fluorophores

A fluorophore is a molecule or portion of a molecule that is capable of producing fluorescence. When light of the appropriate frequency necessary to excite a molecule from its ground state to an excited state is present, excitation will occur. However, once in an excited state, the molecule will be unstable. After some short period of time (typically 10^{-15} to 10^{-9} s), a photon will be released, thereby enabling the molecule to return to a lower energy state. The emitted radiation will be at a longer wavelength (lower energy) than the absorbed radiation due to the loss of energy through various mechanisms such as vibrations, sound, and thermal energy.

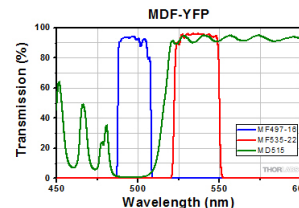
A single fluorophore can be continually excited unless it is destroyed by photobleaching (i.e. the nonreversible destruction of a fluorophore due to photon-induced chemical damage or covalent modification). The average number of excitation and emission cycles that a particular fluorophore can undergo prior to photobleaching depends on its molecular structure and the local environment; some fluorophores bleach quickly after emitting only a few photons while others are far more robust and can undergo thousands or even millions of cycles before bleaching occurs.

Filters for Fluorescence Microscopy

The experimental setup to the right shows the typical filters used for epi-fluorescence microscopy, a form of microscopy in which both the excitation and emission light travel through the microscope objective. By carefully choosing the appropriate filters and mirrors for a given application, the signal-to-noise ratio can be maximized. As shown in the schematic to the right, three types of filters are used to maximize the fluorescence signal while minimizing the unwanted radiation. Each optical element is discussed below.



Click to Enlarge Schematic of light passing through a fluorescence microscope.



MDF-YFP filter set transmission graph. Note the dichroic mirror (green) reflects light in the excitation wavelength range (blue), and transmits light in the emission wavelength range (green).

Excitation Filter

The excitation filter only allows a narrow band of wavelengths to pass through it, around the peak fluorophore excitation wavelength. For example, as shown in the graph to the right, the bandpass region corresponding to greater than 90% transmission for the Yellow Fluorescent Protein (YFP) Excitation Filter (MF497-16) is 489 - 505 nm; incident radiation outside of this range is either partially (for regions near the transmission region) or totally (for regions further from the bandpass region) blocked by the filter.

Dichroic Mirror

Dichroic mirrors are designed to reflect light whose wavelength is below a specific value (i.e. the cutoff wavelength) while permitting all other wavelengths to pass through it unaltered. In a microscope, the dichroic mirror directs the proper wavelength range to the sample as well as to the image plane. The cutoff wavelength value associated with each mirror indicates the wavelength that corresponds to 50% transmission. For example, as shown in the graph to the right, the cutoff wavelength for the Yellow Fluorescent Protein (YFP) Dichroic Mirror (MD515) is ~515 nm. The Specs tab provides information on wavelength ranges corresponding to ≥ 90% average reflectance and transmission for each type of dichroic mirror.


By placing one of these mirrors into the experimental setup at 45° with respect to the incident radiation, the excitation radiation (shown in blue in the above right schematic) is reflected off of the surface of the dichroic mirror and directed towards the sample and microscope objective, while the fluorescence emanating from the sample (shown in red in the above right schematic) passes through the mirror to the detection system.

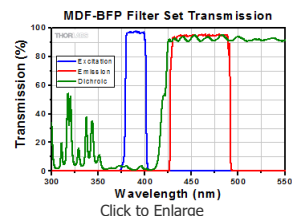
Although dichroic mirrors play a crucial role in fluorescence microscopy, they are not perfect when it comes to blocking unwanted light; typically, ~90% of the light at wavelengths below the cutoff wavelength value are reflected and ~90% of the light at wavelengths above this value are transmitted by the dichroic mirror. Hence, some of the excitation light can be transmitted through the dichroic mirror along with the longer wavelength fluorescence emitted by the sample. To prevent this unwanted light from reaching the detection system, an emission filter is used in addition to the dichroic mirror.


Emission Filter

An emission filter serves the purpose of allowing the desirable fluorescence from the sample to reach the detector while blocking unwanted traces of excitation light. Like the excitation filter, this filter only allows a narrow band of wavelengths to pass through it, around the peak fluorophore emission wavelength. For example, as shown in the graph to the right, the bandpass region corresponding to greater than 90% transmission for the Yellow Fluorescent Protein (YFP) Emission Filter (MF535-22) is 524 - 546 nm; incident radiation outside of this range is either partially (for regions near the transmission region) or totally (for regions further from the bandpass region) blocked by the filter.

Filter Cubes for BFP (Excitation: 390 nm, Emission: 460 nm)


Item # Suffix	-BFP
Design Fluorophore	Blue Fluorescent Protein (BFP)
Excitation Band	390 ± 9 nm
Emission Band	460 ± 30 nm
Dichroic Band (R/T)	360 - 407 nm / 425 - 575 nm
Transmission Data ^a	
Filter Set Item #	MDF-BFP

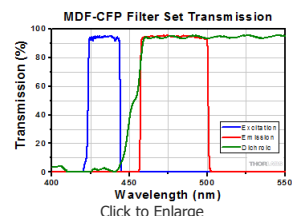



• Click on  for additional plots and downloadable data.

Part Number	Description	Price	Availability
TLV-U-MF2-BFP	Customer Inspired! Microscopy Cube with Pre-Installed BFP Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-BFP	Customer Inspired! Microscopy Cube with Pre-Installed BFP Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-BFP	Customer Inspired! Microscopy Cube with Pre-Installed BFP Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-BFP	Customer Inspired! Microscopy Cube with Pre-Installed BFP Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for CFP (Excitation: 434 nm, Emission: 479 nm)


Item # Suffix	-CFP
Design Fluorophore	Cyan Fluorescent Protein (CFP)
Excitation Band	434 ± 8.5 nm
Emission Band	479 ± 20 nm
Dichroic Band (R/T)	423 - 445 nm / 460 - 610 nm
Transmission Data ^a	
Filter Set Item #	MDF-CFP

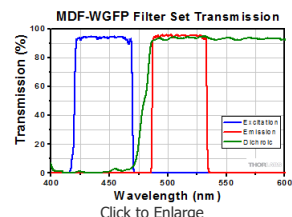



• Click on  for additional plots and downloadable data.

Part Number	Description	Price	Availability
TLV-U-MF2-CFP	Customer Inspired! Microscopy Cube with Pre-Installed CFP Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-CFP	Customer Inspired! Microscopy Cube with Pre-Installed CFP Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-CFP	Customer Inspired! Microscopy Cube with Pre-Installed CFP Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-CFP	Customer Inspired! Microscopy Cube with Pre-Installed CFP Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for WGFP (Excitation: 445 nm, Emission: 510 nm)


Item # Suffix	-WGFP
Design Fluorophore	Wild Type GFP (WGFP)
Excitation Band	445 ± 22.5 nm
Emission Band	510 ± 21 nm
Dichroic Band (R/T)	415 - 470 nm / 490 - 720 nm
Transmission Data ^a	
Filter Set Item #	MDF-WGFP




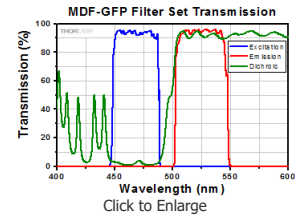
• Click on  for additional plots and downloadable data.

Part Number	Description	Price	Availability
TLV-U-MF2-WGFP	Customer Inspired! Microscopy Cube with Pre-Installed WGFP Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-WGFP	Customer Inspired! Microscopy Cube with Pre-Installed WGFP Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-WGFP	Customer Inspired! Microscopy Cube with Pre-Installed WGFP Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-WGFP	Customer Inspired! Microscopy Cube with Pre-Installed WGFP Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for GFP (Excitation: 469 nm, Emission: 525 nm)


Item # Suffix	-GFP
Design Fluorophore	Green Fluorescent Protein (GFP)
Excitation Band	469 ± 17.5 nm
Emission Band	525 ± 19.5 nm
Dichroic Band (R/T)	452 - 490 nm / 505 - 800 nm
Transmission Data ^a	
Filter Set Item #	MDF-GFP


- Click on  for additional plots and downloadable data.

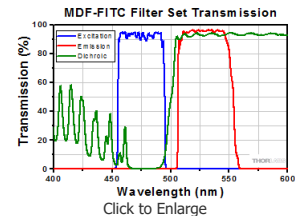


Part Number	Description	Price	Availability
TLV-U-MF2-GFP	Customer Inspired! Microscopy Cube with Pre-Installed GFP Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-GFP	Customer Inspired! Microscopy Cube with Pre-Installed GFP Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-GFP	Customer Inspired! Microscopy Cube with Pre-Installed GFP Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-GFP	Customer Inspired! Microscopy Cube with Pre-Installed GFP Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for FITC (Excitation: 475 nm, Emission: 530 nm)


Item # Suffix	-FITC
Design Fluorophore	Fluorescein Isothiocyanate (FITC)
Excitation Band	475 ± 17.5 nm
Emission Band	530 ± 21.5 nm
Dichroic Band	470 - 490 nm / 508 - 675 nm
Transmission Data ^a	
Filter Set Item #	MDF-FITC


- Click on  for additional plots and downloadable data.

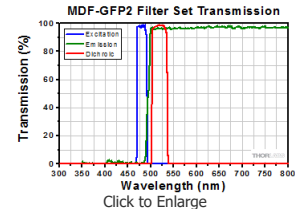


Part Number	Description	Price	Availability
TLV-U-MF2-FITC	Customer Inspired! Microscopy Cube with Pre-Installed FITC Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-FITC	Customer Inspired! Microscopy Cube with Pre-Installed FITC Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-FITC	Customer Inspired! Microscopy Cube with Pre-Installed FITC Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-FITC	Customer Inspired! Microscopy Cube with Pre-Installed FITC Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for Alexa Fluor® 488 (Excitation: 482 nm, Emission: 520 nm)


Item # Suffix	-GFP2
Design Fluorophore	Alexa Fluor® 488 / Green Fluorescent Protein (GFP)
Excitation Band	482 ± 9 nm
Emission Band	520 ± 14 nm
Dichroic Band (R/T)	350 - 488 nm / 502 - 950 nm
Transmission Data ^a	
Filter Set Item #	MDF-GFP2

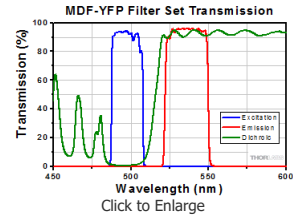
- Click on  for additional plots and downloadable data.




Part Number	Description	Price	Availability
TLV-U-MF2-GFP2	Customer Inspired! Microscopy Cube with Pre-Installed Alexa Fluor® 488 Filter Set for Olympus AX, BX2, IX2	\$1,247.33	Today
TLV-U-FF-GFP2	Customer Inspired! Microscopy Cube with Pre-Installed Alexa Fluor® 488 Filter Set for Olympus BX3, IX3	\$1,247.33	Today
TLV-QFXL-GFP2	Customer Inspired! Microscopy Cube with Pre-Installed Alexa Fluor® 488 Filter Set for Nikon E200-1000, TE200	\$1,203.04	Today
TLV-TE2000-GFP2	Customer Inspired! Microscopy Cube with Pre-Installed Alexa Fluor® 488 Filter Set for Nikon TE2000 and Eclipse Ti	\$1,203.04	Today

Filter Cubes for YFP (Excitation: 497 nm, Emission: 535 nm)


Item # Suffix	-YFP
Design Fluorophore	Yellow Fluorescent Protein (YFP)
Excitation Band	497 ± 8 nm
Emission Band	535 ± 11 nm
Dichroic Band	490 - 510 nm / 520 - 700 nm
Filter Set Transmission Data ^a	
Filter Set Item #	MDF-YFP

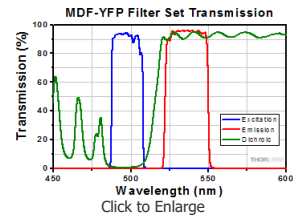



- Click on  for additional plots and downloadable data.

Part Number	Description	Price	Availability
TLV-U-MF2-YFP	Customer Inspired! Microscopy Cube with Pre-Installed YFP Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-YFP	Customer Inspired! Microscopy Cube with Pre-Installed YFP Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-YFP	Customer Inspired! Microscopy Cube with Pre-Installed YFP Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-YFP	Customer Inspired! Microscopy Cube with Pre-Installed YFP Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for YFP (Excitation: 497 nm, Emission: 535 nm)


Item # Suffix	-YFP
Design Fluorophore	Yellow Fluorescent Protein (YFP)
Excitation Band	497 ± 8 nm
Emission Band	535 ± 11 nm
Dichroic Band	490 - 510 nm / 520 - 700 nm
Filter Set Transmission Data ^a	
Filter Set Item #	MDF-YFP

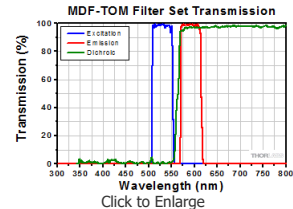



- Click on  for additional plots and downloadable data.

Part Number	Description	Price	Availability
TLV-U-MF2-YFP	Customer Inspired! Microscopy Cube with Pre-Installed YFP Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-YFP	Customer Inspired! Microscopy Cube with Pre-Installed YFP Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-YFP	Customer Inspired! Microscopy Cube with Pre-Installed YFP Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-YFP	Customer Inspired! Microscopy Cube with Pre-Installed YFP Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for tdTomato (Excitation: 531 nm, Emission: 593 nm)


Item # Suffix	-TOM
Design Fluorophore	tdTomato
Excitation Band	531 ± 20 nm
Emission Band	593 ± 20 nm
Dichroic Band (R/T)	350 - 555 nm / 569 - 950 nm
Transmission Data ^a	
Filter Set Item #	MDF-TOM




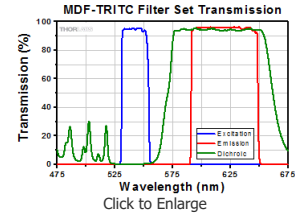
- Click on  for additional plots and downloadable data.

Part Number	Description	Price	Availability
TLV-U-MF2-TOM	Customer Inspired! Microscopy Cube with Pre-Installed tdTomato Filter Set for Olympus AX, BX2, IX2	\$1,247.33	Today
TLV-U-FF-TOM	Customer Inspired! Microscopy Cube with Pre-Installed tdTomato Filter Set for Olympus BX3, IX3	\$1,247.33	Today
TLV-QFXL-TOM	Customer Inspired! Microscopy Cube with Pre-Installed tdTomato Filter Set for Nikon E200-1000, TE200	\$1,203.04	Today
TLV-TE2000-TOM	Customer Inspired! Microscopy Cube with Pre-Installed tdTomato Filter Set for Nikon TE2000 and Eclipse Ti	\$1,203.04	Today

Filter Cubes for TRITC (Excitation: 542 nm, Emission: 620 nm)


Item # Suffix	-TRITC
Design Fluorophore	Tetramethylrhodamine Isothiocyanate (TRITC)
Excitation Band	542 ± 10 nm
Emission Band	620 ± 26 nm
Dichroic Band (R/T)	525 - 556 nm / 580 - 650 nm
Transmission Data ^a	
Filter Set Item #	MDF-TRITC


- Click on  for additional plots and downloadable data.

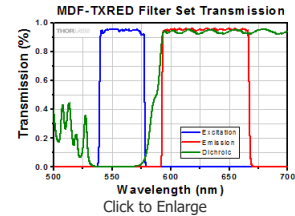


Part Number	Description	Price	Availability
TLV-U-MF2-TRITC	Customer Inspired! Microscopy Cube with Pre-Installed TRITC Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-TRITC	Customer Inspired! Microscopy Cube with Pre-Installed TRITC Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-TRITC	Customer Inspired! Microscopy Cube with Pre-Mounted TRITC Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-TRITC	Customer Inspired! Microscopy Cube with Pre-Mounted TRITC Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for TXRED (Excitation: 559 nm, Emission: 630 nm)


Item # Suffix	-TXRED
Design Fluorophore	Texas Red (TXRED)
Excitation Band	559 ± 17 nm
Emission Band	630 ± 34.5 nm
Dichroic Band (R/T)	533 - 580 nm / 595 - 800 nm
Transmission Data ^a	
Filter Set Item #	MDF-TXRED


- Click on  for additional plots and downloadable data.

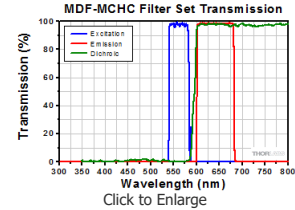


Part Number	Description	Price	Availability
TLV-U-MF2-TXRED	Customer Inspired! Microscopy Cube with Pre-Installed Texas Red Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-TXRED	Customer Inspired! Microscopy Cube with Pre-Installed Texas Red Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-TXRED	Customer Inspired! Microscopy Cube with Pre-Installed Texas Red Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-TXRED	Customer Inspired! Microscopy Cube with Pre-Installed Texas Red Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for mCherry (Excitation: 562 nm, Emission: 641 nm)


Item # Suffix	-MCHC
Design Fluorophore	mCherry
Excitation Band	562 ± 20 nm
Emission Band	641 ± 37.5 nm
Dichroic Band (R/T)	350 - 585 nm / 601 - 950 nm
Transmission Data ^a	
Filter Set Item #	MDF-MCHC

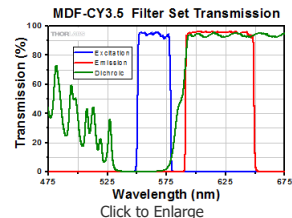
- Click on  for additional plots and downloadable data.




Part Number	Description	Price	Availability
TLV-U-MF2-MCHC	Customer Inspired! Microscopy Cube with Pre-Installed MDF-MCHC Filter Set for Olympus AX, BX2, IX2	\$1,247.33	Today
TLV-U-FF-MCHC	Customer Inspired! Microscopy Cube with Pre-Installed MDF-MCHC Filter Set for Olympus BX3, IX3	\$1,247.33	Today
TLV-QFXL-MCHC	Customer Inspired! Microscopy Cube with Pre-Installed MDF-MCHC Filter Set for Nikon E200-1000, TE200	\$1,203.04	Today
TLV-TE2000-MCHC	Customer Inspired! Microscopy Cube with Pre-Installed MDF-MCHC Filter Set for Nikon TE2000 and Eclipse Ti	\$1,203.04	Today

Filter Cubes for Cyanine (Excitation: 565 nm, Emission: 620 nm)


Item # Suffix	-CY3.5
Design Fluorophore	Cyanine (CY3.5)
Excitation Band	565 ± 12 nm
Emission Band	620 ± 26 nm
Dichroic Band (R/T)	533 - 580 nm / 595 - 800 nm
Transmission Data ^a	
Filter Set Item #	MDF-CY3.5

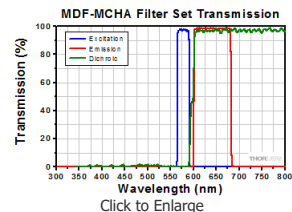



• Click on  for additional plots and downloadable data.

Part Number	Description	Price	Availability
TLV-U-MF2-CY3.5	Customer Inspired! Microscopy Cube with Pre-Installed Cyanine Filter Set for Olympus AX, BX2, IX2	\$1,024.85	Today
TLV-U-FF-CY3.5	Customer Inspired! Microscopy Cube with Pre-Installed Cyanine Filter Set for Olympus BX3, IX3	\$1,024.85	Today
TLV-QFXL-CY3.5	Customer Inspired! Microscopy Cube with Pre-Installed Cyanine Filter Set for Nikon E200-1000, TE200	\$980.56	Today
TLV-TE2000-CY3.5	Customer Inspired! Microscopy Cube with Pre-Installed Cyanine Filter Set for Nikon TE2000 and Eclipse Ti	\$980.56	Today

Filter Cubes for mCherry (Excitation: 578 nm, Emission: 641 nm)

Item # Suffix	-MCHA
Design Fluorophore	mCherry
Excitation Band	578 ± 10.5 nm
Emission Band	641 ± 37.5 nm
Dichroic Band (R/T)	350 - 588 nm / 603 - 950 nm
Transmission Data ^a	
Filter Set Item #	MDF-MCHA



• Click on  for additional plots and downloadable data.

Part Number	Description	Price	Availability
TLV-U-MF2-MCHA	Customer Inspired! Microscopy Cube with Pre-Installed MDF-MCHA Filter Set for Olympus AX, BX2, IX2	\$1,247.33	Today
TLV-U-FF-MCHA	Customer Inspired! Microscopy Cube with Pre-Installed MDF-MCHA Filter Set for Olympus BX3, IX3	\$1,247.33	Today
TLV-QFXL-MCHA	Customer Inspired! Microscopy Cube with Pre-Installed MDF-MCHA Filter Set for Nikon E200-1000, TE200	\$1,203.04	Today
TLV-TE2000-MCHA	Customer Inspired! Microscopy Cube with Pre-Installed MDF-MCHA Filter Set for Nikon TE2000 and Eclipse Ti	\$1,203.04	Today

Visit the [Microscopy Filter Cubes with Pre-Installed Fluorescence Filters](https://www.thorlabs.com/newgrouppage9_pf.cfm?guide=10&category_id=&objectgroup_id=10555) page for pricing and availability information:
https://www.thorlabs.com/newgrouppage9.cfm?objectgroup_id=10555