BrightLine® Pinkel 1λ P-V RWE super-resolution laser filter set, optimized for 488 & 561 nm laser sources
Part Number: LF488/561-2X-C-000

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(within US and Canada)

BrightLine® Pinkel 1λ P-V RWE super-resolution laser filter set, optimized for 488 & 561 nm laser sources

This "Pinkel" multiband set includes single-band excitation filters and a dual-band emission & dichroic filter. It is optimized for laser excitation utilizing a 473 or 488 nm laser source for GFP or FITC and a 559, 561.4 or 568.2 nm laser source for mCherry. This set provides high brightness, extremely low crosstalk, and superb signal-to-noise ratio. The dichroic offers industry-leading 1λ P-V RWE for minimal focus shift and aberrations of the laser beam spot up to 10 mm diameter to enable popular imaging and Super-Resolution techniques including TIRF, PALM, STORM, and Structured-Illumination.

Loose and cube mounted filter sets are certified to deliver dichroic flatness <= 1λ P-V RWE @ 632.8 nm.

Looking for this filter set in one of the following cubes: NQF or LDMK?
Our previous version is still available for those cube configurations LF488/561-2X-B

Individual filters and filter sets (no cube):

These filters sets contain individual filters. For filter sets already mounted in a holder/cube, scroll down to see complete mounted sets with cubes.

Part Number		Price[1]	Stock Status
LF488/561-2X-C-000 (Standard size set, fits most microscopes)		$1,395	Contact Us
Filter Role	**Filter Size**	**Part Number**	**Price[1]**
Single Band Exciter	25 mm x 5.0 mm	FF02-482/18-25	$305
Single Band Exciter	25 mm x 5.0 mm	FF01-563/9-25	$305
Dual Band Emitter	25 mm x 3.5 mm	FF01-523/610-25	$395
Dual Band Dichroic	25.2 mm x 35.6 mm x 1.1 mm	Di03-R488/561-t1-25x36	$495
$1,495		Contact Us	
Filter Role	**Filter Size**	**Part Number**	**Price[1]**
Single Band Exciter	25 mm x 5.0 mm	FF02-482/18-25	$305
Single Band Exciter	25 mm x 5.0 mm	FF01-563/9-25	$305
Dual Band Emitter	25 mm x 3.5 mm	FF01-523/610-25	$395
Dual Band Dichroic	25.2 mm x 35.6 mm x 3.0 mm	Di03-R488/561-t3-25x36	$595
LF488/561-2X-C-L01 (Leica 'Large' set)		$1,395	Contact Us
Filter Role	**Filter Size**	**Part Number**	**Price[1]**
$1,435		Contact Us	
Filter Role	**Filter Size**	**Part Number**	**Price[1]**

1) US domestic pricing only. If you are ordering from outside the US, please contact your nearest regional distributor for the correct list price.

Complete filter sets mounted in microscope holders/cubes:

These sets are delivered already mounted in microscope filter holders, often called 'cubes', ready to be dropped into your microscope.

Nikon TE 2000 for microscopes: TE 2000, 50i, 55i, 80i, 90i, Eclipse Ti, Ni, and Ci series, and any using the Epi-fluor Illuminator

LF488/561-2X-C-NTE (set mounted in cube)	$1,915	Contact Us

Filter Role	Filter Size	Part Number	Price[1]
Single Band Exciter	25 mm x 5.0 mm	FF02-482/18-25	$305
Single Band Exciter	25 mm x 5.0 mm	FF01-563/9-25	$305
Dual Band Emitter	25 mm x 3.5 mm	FF01-523/610-25	$395
Dual Band Dichroic	25.2 mm x 35.6 mm x 1.1 mm	Di03-R488/561-t1-25x36	$495
TE 2000 cube		NTE	$395

Olympus U-MF2 for microscopes: AX70, BX, BX41, BX50, BX51, BX60, BX61, BX50/51WI, BX60/61WI, IX50, IX51, IX70, IX71, IX81

LF488/561-2X-C-OMF (set mounted in cube) $1,955 Contact Us

Filter Role	Filter Size	Part Number	Price[1]
Single Band Exciter	25 mm x 5.0 mm	FF02-482/18-25	$305
Single Band Exciter	25 mm x 5.0 mm	FF01-563/9-25	$305
Dual Band Emitter	25 mm x 3.5 mm	FF01-523/610-25	$395
Dual Band Dichroic	25.2 mm x 35.6 mm x 1.1 mm	Di03-R488/561-t1-25x36	$495
U-MF2 cube		OMF	$435

Olympus U-FF for microscopes: BX53, BX63

LF488/561-2X-C-OFF (set mounted in cube) $1,955 Contact Us

Filter Role	Filter Size	Part Number	Price[1]
Single Band Exciter	25 mm x 5.0 mm	FF02-482/18-25	$305
Single Band Exciter	25 mm x 5.0 mm	FF01-563/9-25	$305
Dual Band Emitter	25 mm x 3.5 mm	FF01-523/610-25	$395
Dual Band Dichroic	25.2 mm x 35.6 mm x 1.1 mm	Di03-R488/561-t1-25x36	$495
U-FF cube		OFF	$435

Zeiss FL Cube EC P+C for microscopes: Axio Imager, Axiostar Plus, Axioskop 40, Axioskop 2 (post-2001), Axioplan 2i, Axioplan 2ie, Axiovert 200, Axiovert 40, Axio Observer, Axio Examiner and Axio Scope A1

LF488/561-2X-C-ZHE (set mounted in cube) $1,795 Contact Us

Filter Role	Filter Size	Part Number	Price[1]
Single Band Exciter	25 mm x 5.0 mm	FF02-482/18-25	$305
Single Band Exciter	25 mm x 5.0 mm	FF01-563/9-25	$305
Dual Band Emitter	25 mm x 3.5 mm	FF01-523/610-25	$395
Dual Band Dichroic	25.2 mm x 35.6 mm x 1.1 mm	Di03-R488/561-t1-25x36	$495
FL Cube EC P+C cube		ZHE	$275

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Optical Specifications

Specification	Value
Blocking	BrightLine filters have blocking far exceeding OD 6 as needed to ensure a black background, even when using modern low-noise CCD cameras. The blocking is optimized for microscopy applications using our exclusive SpecMaker™ fluorescence filter design.

General Filter Specifications

Specification	Value
Microscope Compatibility	BrightLine filters are available to fit Leica, Nikon, Olympus, Zeiss, and Aperio microscopes.
Optical Damage Rating	Testing has proven to show no signs of degradation when exposed to at least 6.0 W of power from an unfiltered xenon arc lamp over a 25 mm diameter (corresponding to 1.2 W/cm^2) for over 500 hours.

Physical Filter Specifications

Specification	Value
Scratch-Dig	60-40
Exciter/Emitter Orientation	Arrow on ring indicates preferred direction of propagation of light.
Dichroic Orientation	"Reflective coating side" should face toward light source and sample.
Flatness	Loose and cube mounted filter sets deliver certified dichroic flatness ≤ 1λ P-V RWE @ 632.8 nm

Fluorophore Compatibility

★★★★ indicates this filter set was specifically optimized for this fluorophore.

★★★ indicates an excellent spectral match between fluorophore and filter set that should result in nearly ideal performance in most situations.

★★ indicates a good match between fluorophore and filter set, with actual performance dependent on other experimental conditions.

Green

Fluorophore	Compatibility
5-carboxy-2,7-dichlorofluorescein	★★★
5-FAM (5-carboxyfluorescein)	★★★
Acridine Orange (+DNA)	★★★
Alexa Fluor® 430	★★
Alexa Fluor® 488	★★★
Alexa Fluor® 500	★★★
AmCyan1	★★
ATTO 488	★★★
ATTO 495	★★★
BCECF (pH 5.5)	★★★
BCECF (pH 9.0)	★★★
BODIPY FL	★★★
BODIPY FL-MeOH	★★★
Calcein	★★★
Calcium Green-1	★★
CFP2	★★★
Cy2™	★★★
CyQUANT GR-DNA	★★★
DAF-FM-NO	★★★
Dendra2 (Green)	★★★
DiO	★★★
Dronpa	★★★
DY-505-Phalloidin	★★★
ecliptic pHluorin pH5.5	★★★
Emerald	★★★
FITC (Fluorescein)	★★★★
FlAsH-CCPFCC	★★
Fluo-3	★★
Fluo-4	★★★
Fluorescein dextran	★★★
Fluorescein-pH 8.0	★★★
Fluoro-Emerald	★★★
FluoSpheres Yellow-Green fluorescent microspheres	★★★
GFP (EGFP)	★★★★
Green 496	★★★
Green 500	★★★
HCS LipidTOX Green neutral lipid stain	★★★
HCS LipidTOX Green phospholipidosis	★★★
HiLyte Fluor™ 488	★★★
LIVE-DEAD Fixable Green Dead Cell Stain	★★★
LysoSensor Green	★★★
LysoTracker Green	★★★
LysoTracker Yellow HCK-123	★★
Magnesium Green	★★
mHoneyDew	★★
MitoTracker™ Green	★★★
mWasabi	★★★
NBD-X (MeOH)	★★★
NeuroTrace 500/525 Green Fluorescent Nissl Stain	★★★
Oregon Green™ 488	★★★
Oregon Green™ 514	★★
PicoGreen	★★★
PKH67	★★★
Qdot® 525 Nanocrystals	★★
Qdot® 545 Nanocrystals	★★
ratiometric pHluorin pH5	★★★
Rhodamine 110	★★★

Rhodamine 123	★★
Rhodamine Green	★★★
Rhodol Green	★★★
sgGFP™ (super glow GFP)	★★★
Sodium Green	★★★
SpectrumGreen	★★★
SYBR Gold nucleic acid gel stain-DNA	★★★
SYBR Green I nucleic acid gel stain-DNA	★★★
SYBR Safe DNA gel stain-DNA	★★
SYTO 11	★★
SYTO 13	★★★
SYTO 16	★★★
SYTO 9	★★★
SYTO RNASelect geen fluorescent cell stain	★★★
SYTOX Green-DNA	★★★
TO-PRO-1	★★
TOTO-1	★★
TurboGFP	★★★
Vybrant DyeCycle Green	★★★
wtGFP (wild type GFP, non-UV excitation)	★★★
YO-PRO-1	★★★
YOYO-1	★★★

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★★ indicates a good match between fluorophore and filter set, with actual performance dependent on other experimental conditions.

Orange

Fluorophore	Compatibility
2-dodecylresorufin-lipid	★★★
5-ROX (carboxy-X-rhodamine)	★★★
5-TAMRA (5-carboxytetramethylrhodamine, pH 7.0)	★★
7-AAD	★★
Alexa Fluor® 546	★★
Alexa Fluor® 568	★★★
Alexa Fluor® 594	★★
Amplex UltraRed peroxidation product-pH 7.5	★★★
AsRed 2	★★★
ATTO 550	★★
ATTO 565	★★★
ATTO 590	★★
BOBO™-3	★★★
BODIPY TMR-X	★★
BODIPY TR-X (MeOH)	★★
BODIPY TR-X phallacidin	★★★
Calcium Crimson	★★
Calcium Orange	★★
CellTrace BODIPY TR methyl ester	★★
CellTracker Red CMTPX	★★★
Cy3.5™	★★★
Dendra2 (Red)	★★
DsRed	★★★
DsRed-Express	★★★
dTomato	★★★
DY-590	★★★
DyLight 594	★★
Ethidium bromide	★★
Ethidium homodimer	★★★
FluoSpheres Red fluorescent microspheres	★★★

FluoSpheres Red fluorescent microspheres	★★★
HcRed1	★★
HCS LipidTOX Red neutral lipid stain	★★★
HCS LipidTOX Red phospholipidosis	★★★
HiLyte Fluor™ 594	★★
Hypericin	★★
KFP-Red	★★★
LOLO-1	★★★
LysoTracker Red	★★★
Magnesium Orange	★★
mApple	★★★
mCherry	★★★★
Merocyanine 540	★★★
MitoTracker™ Orange	★★
MitoTracker™ Red	★★★
mKate2	★★★
mPlum	★★
mRFP	★★★
mRFP1	★★★★
mRuby	★★★
mStrawberry	★★★
mTangerine	★★★
Nile red-phospolipid	★★★
Orange 552	★★
pHrodo™, succinimidyl ester	★★★
Propidium Iodide (PI)	★★★
Pro-Q Diamond	★★★
Qdot® 585 Nanocrystals	★★★
Qdot® 605 Nanocrystals	★★★
Qdot® 625 Nanocrystals	★★
ReAsH-CCPGCC	★★★
Red 580	★★★
Resorufin	★★★
Rhod-2	★★
Rhodamine phalloidin	★★
Rhodamine Red-X	★★★
R-phycoerythrin	★★
SNARF (carboxy) 514 Excitation pH 9	★★
SNARF-1 488nm (ph 6.0)	★★★
SNARF-1 488nm (ph 9.0)	★★
SNARF-1 514nm (ph 6.0)	★★★
SNARF-1 514nm (ph 9.0)	★★
SpectrumOrange	★★★
Sulforhodamine 101-EtOH	★★★
SYPRO Ruby protein gel stain	★★
Tetramethylrhodamine dextran	★★★
Texas Red dextran	★★
Texas Red DHPE	★★★
TRITC (Tetramethylrhodamine)	★★★
TurboFP635(Katushka)	★★
TurboRFP	★★
X-Rhod-1 Indicator	★★★
YOYO-3	★★

Technical Information

Topic	Description
Laser-based Instrumentation	An review of common of laser-based instrumentation, including solutions from Semrock and additional learning resources.
Laser Scanning/Spinning Disk Confocal	An overview of confocal microscopy techniques and applications, including solutions from Semrock and additional

Laser Scanning/Spinning Disk Confocal Microscopy	An overview of confocal microscopy techniques and applications, including solutions from Semrock and additional learning resources.
TIRF (Total Internal Reflection Fluorescence)	An overview of TIRF microscopy, including solutions from Semrock and additional learning resources.
High Performance Microscopy	An overview of high performance microscopy, including solutions from Semrock and additional learning resources.
Spectral Modeling in Fluorescence Microscopy	Discusses various sources of noise in fluorescence microscopy and how to maximize signal-to-noise ratios using software, sample preparation and optical filter selection
Super-resolution Microscopy	Discusses advancements in fluorescence microscopy techniques that allow users to break the defraction limit and visualize resolution similar to that of an electron microscope
Optical Filters for Laser-based Fluorescence Microscopes	Analysis of additional considerations that laser excitation imposes on traditional fluorescence microscopy filter selection with a focus on multiple-laser systems.
Perfecting TIRF Optics	Prashant Prabhat, PhD, and Turan Erdogan, PhD, Semrock Inc., BioOptics World, Jan/Feb 2009 Discusses additional considerations that laser excitation imposes on traditional fluorescence microscopy filter selection
New Optical Filters Improve High-Speed Multicolor Fluorescence Imaging	Turan Erdogan, PhD, Semrock Inc., BioPhotonics, March 2006 Compares benefits and drawbacks of full multiband, pinkel and sedat filter sets for high-speed multicolor fluorescence imaging
Fluorescence Imaging: Optical filters optimize laser-based fluorescence imaging systems	Prashant Prabhat, PhD, and Turan Erdogan, PhD, Semrock Inc., Laser Focus World, January 2010 Discusses additional considerations that laser excitation imposes on traditional fluorescence microscopy filter selection
Bringing Super-resolution to Fluorescence Microscopy	Prashant Prabhat, PhD, and Turan Erdogan, PhD, Semrock Inc., BioPhotonics, May/June 2010 Advances in fluorescence microscopy techniques allow users to break the defraction limit and visualize resolution similar to that of an electron microscope
Optical Filters for Laser-based Fluorescence Microscopes	Discusses additional considerations that laser excitation imposes on traditional fluorescence microscopy filter selection
Multiband Filter Set Terminology	Compares benefits and drawbacks of full multiband, pinkel and sedat filter sets
Orientation of Filters in a Microscope	A guide to properly orienting Semrock filters based on the filter markings.
Introduction to Fluorescence Filters	Shows how optical filters are used in a traditional fluorescence microscope and describes important factors to consider when choosing optical filters.
Flatness of Dichroic Beamsplitters	Describes the impact of non-flat dichroic beamsplitters on microscope image fidelity
Filter Reliability	Compares the performance and reliability of hard coated filters to traditional soft-coated filters and provides information about the testing standards for Semrock filters
Cube Assembly Instructions	PDF and video instruction for installing filters into popular filter cubes
Cleaning Optical Filters	Instructions for cleaning hard coated optical filters