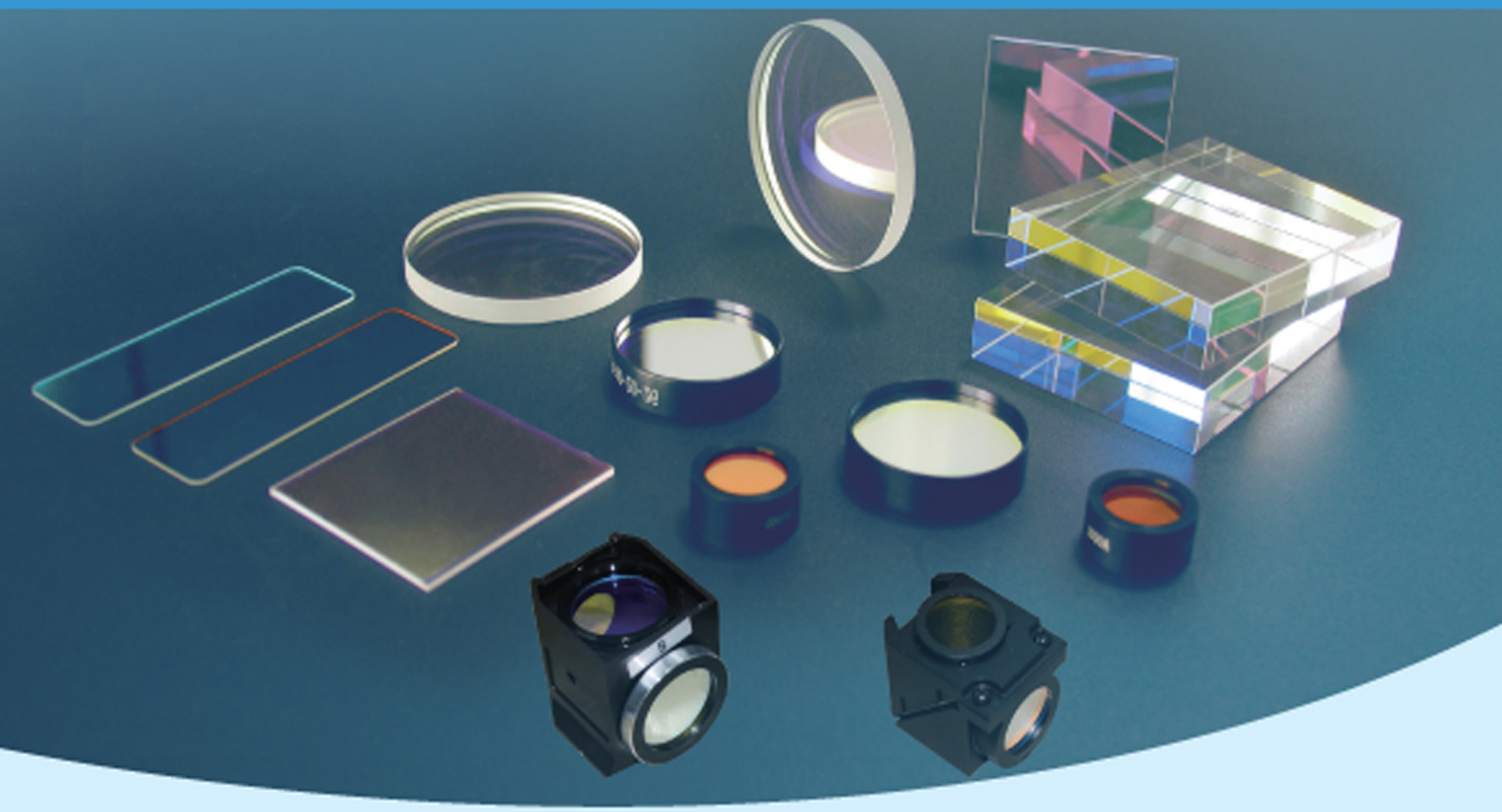
Optical Filters



Foreal develops many types of filters using its advanced ion beam sputtering technology. These filters are used in medical equipment and laser products.

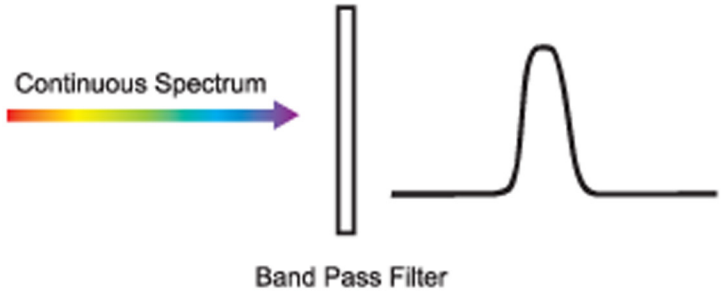
Key Features

- High Transmisssion
- Deep Blocking
- Steep Slope
- Precise CWL Accuracy
- Stable Ripple at Pass Band
- Excellent Environmental Stability

Typical Products and Applications

Item	Application	Typical Wavelength (nm)
Band Pass Filter	Flow Cytometry Water Analysis Microscopy Fluorescence or Other Analysis	B, G, UV, V, BV Series 420, 450, 476, 500, 528 550, 560, 580, 600, 655
IPL Filter	IPL Quantum, Hair Removal Anti-Wrinkle, Acne/Pox Treatment	400, 420, 450, 510, 560, 585 620, 640, 695, 700, 755
Long Pass/Short Pass Filter	Medical Laser	300 - 3000

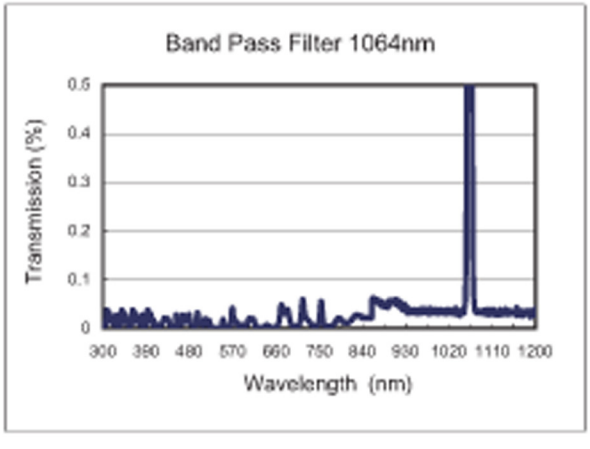
Band Pass Filter

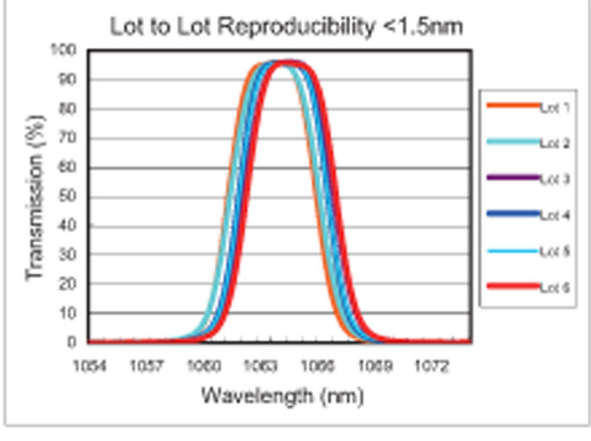


Key Features

- High Transmission
- Deep Blocking
- Steep Slope
- Stable Ripple at Band Pass
- Excellent Environmental Stability

Typical Spectrum

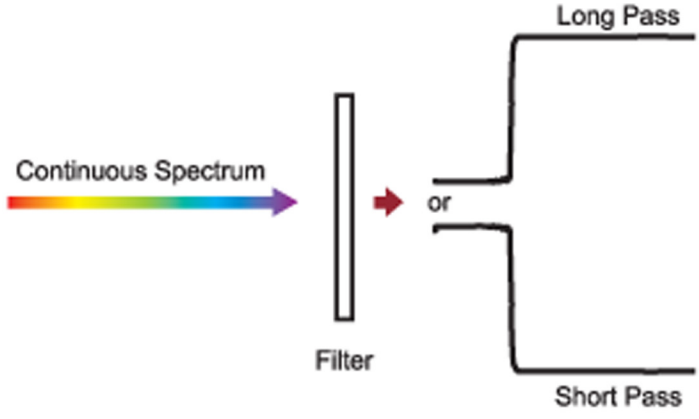


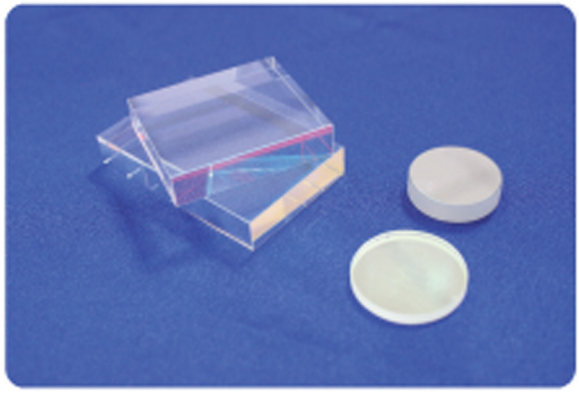


Typical Specifications

Dimension	4mm - 80mm, round or square
Center Wavelength (CWL)	340nm - 1570nm
Full Width at Half Maximum (FWHM)	2nm - 100nm
Transmission at CWL	>70% (or Custom Design)
Cut-Off Wavelength	UV - NIR
Blocking	>OD4 or OD6
Surface Quality	80/50

Long Pass / Short Pass Filter

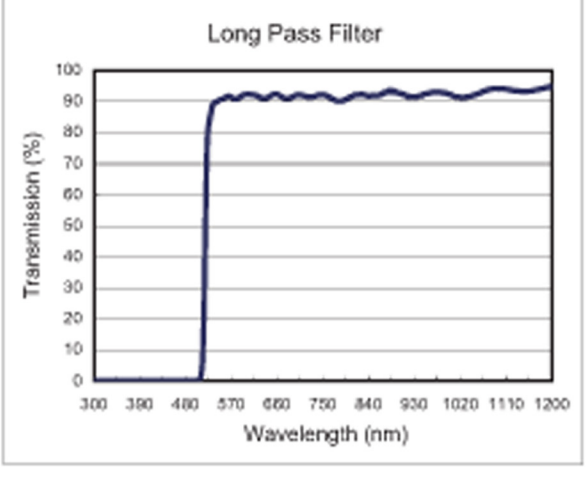


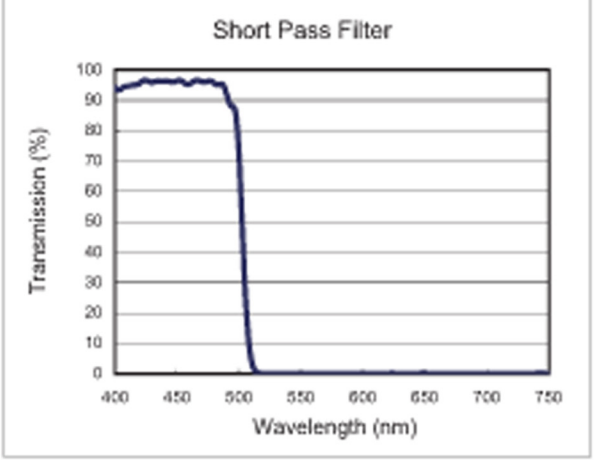


Key Features

- High Transmission
- Deep Blocking
- Steep Slope
- Stable Ripple at Band Pass
- Excellent Environmental Stability

Typical Spectrum

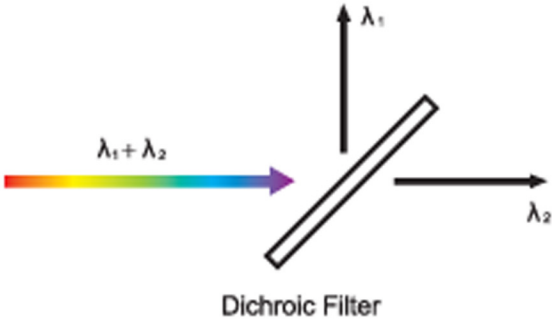


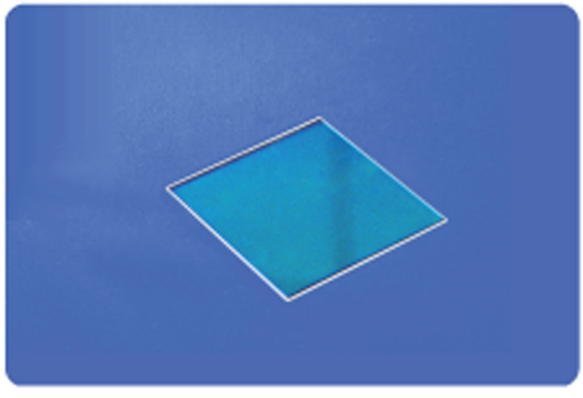


Typical Specifications

Dimension	4mm - 80mm, round or square
Substrate Material	Borofloat, BK7, Fused Silica, Sapphire
Cut On/Off Wavelength ($\Delta\lambda$ at 50% of Peak)	340nm - 1570nm
Tolerance	< +/-10nm
Transmission	>90%
Rejection	>OD4
Clear Aperture (CA)	>80%

Dichroic Filter

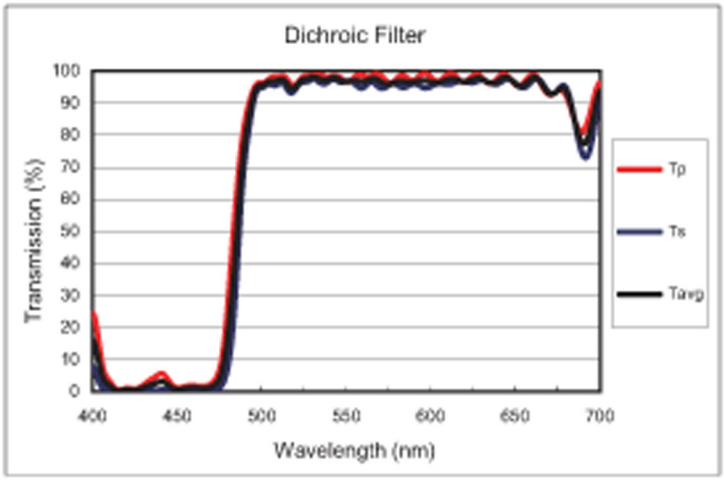




Key Features

- High Transmission
- High Reflection
- Non-Polarization
- Excellent Environmental Stability

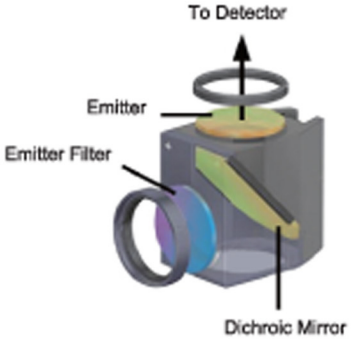
Typical Spectrum

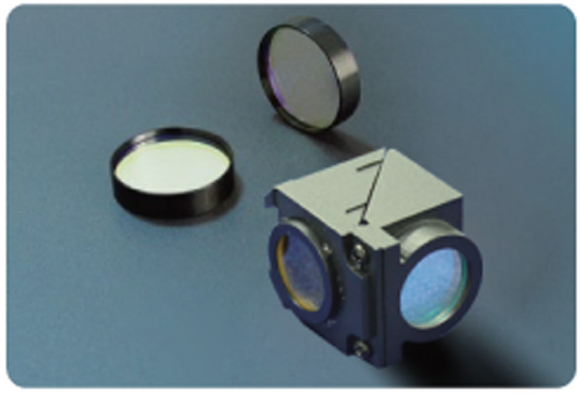


Main Applications

- Fluorescence
- Bright-Field Microscope
- Confocal Microscopy
- Other Imaging Techniques

Fluorescence Filter

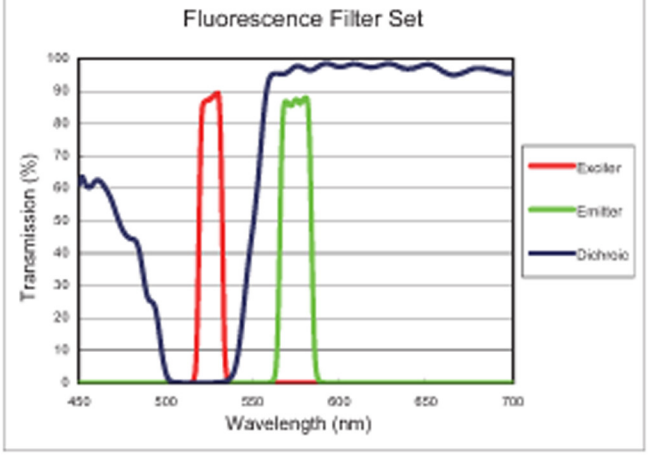




Key Features

- High Transmission
- Deep Blocking
- Steep Slope
- Stable Ripple at Band Pass
- Excellent Environmental Stability

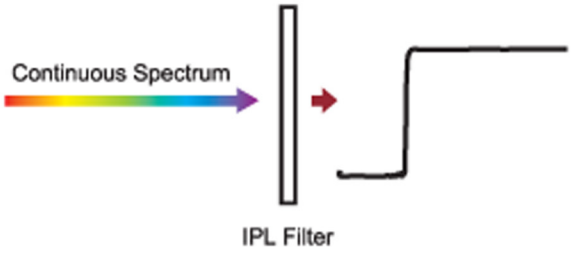
Typical Spectrum

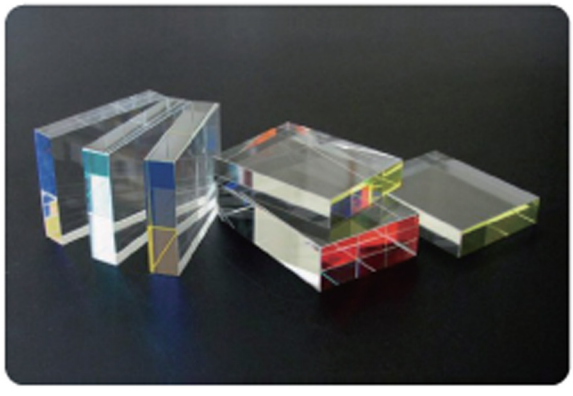


Main Applications

- Flow Cytometry
- Fluorescence
- Analytical Chemistry / Water Analysis
- Microscopy
- Fluorescence Genetic Analyzer

IPL Filter

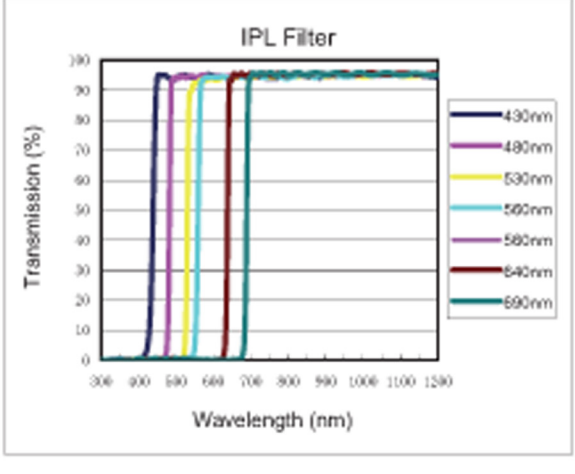




Key Features

- High Transmission
- Deep UV Blocking
- Steep Slope
- Stable Ripple at Band Pass
- Excellent Environmental Stability

Typical Spectrum



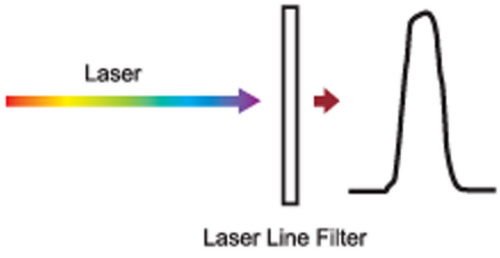
Main Applications

- Skin Rejuvenation
- Hair Removal
- Anti-wrinkle
- Acne Treatment

Standard Products

Material	Glass, Fused Silica and Sapphire
Standard Size (mm)	40x8x30, 40x10x50, 54.5x15x50, 52x16x0.9
Typical Wavelengths (nm)	400, 420, 450, 510, 560, 585, 620, 640, 695, 700, 755

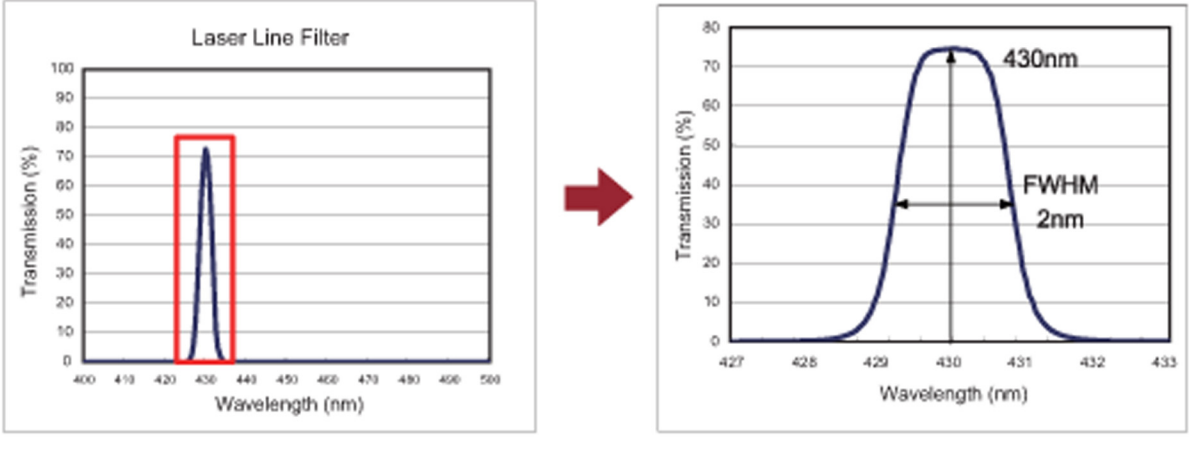
Laser Line Filter



Key Features

- High Peak Signal to Noise Ratio (PSNR)
- Deep Blocking
- Steep Slope
- High Damage Threshold
- Excellent Environmental Stability

Typical Spectrum



Typical Specifications

Dimension	4mm - 80mm, round or square
Center Wavelength (CWL)	340nm - 1570nm
Full Width at Half Maximum (FWHM)	0.3% - 0.6% of CWL
Transmission	>90% (or Custom Design)
Blocking	>OD6
Slope (T=1% to T=90%)	2nm - 3nm