

Narrowband Interference Filters

- Precise **Laser Line Filters** are available for all popular lasers
- **Spectral Line Filters** allow isolation of all common prominent lines
- **Visible Range Filters** of 10nm and 40nm bandwidth are available every 50nm throughout the spectrum
- All **Narrowband Filters** are supplied in permanent metal rings with engraved wavelength

We offer three ranges of interference filters, laser line filters, spectral line filters and visible range filters. The laser line filters are intended for either isolation or simulation of laser lines. The major laser lines of interest are listed here but if you need a filter for a different laser type please call and we will be glad to supply you with a quote. Laser line filters are offered in three different bandwidths: 1nm, 3nm and 10nm.

The spectral line filters are intended for the isolation of individual lines from common spectral sources. They have a bandwidth of 10nm.

The visible range filters cover 50nm increments from 350 to 800 nm with bandwidths of either 10nm or 40nm. All interference filters are mounted in a metal ring and engraved with the center wavelength and bandwidth.

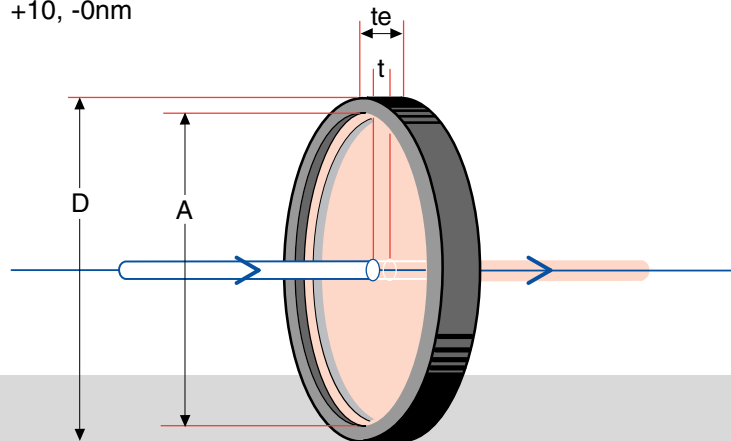


All interference filters are sensitive to the angle of incidence of the incoming beam. This can be a very useful attribute as it allows a certain amount of wavelength tuning to be done where appropriate. As a rule of thumb, all of our filters may be tilt-tuned toward the blue by about 10% of their center wavelength.

All our interference filters are supplied with an individual spectrophotometer trace.

Specifications & Tolerances

Diameter: 25mm+0, -0.25mm	Clear aperture: 21mm
Bandwidth: $\pm 20\%$	Thickness: $3.5\text{mm} < t < 8.5\text{mm}$
Surface quality: 80-50	Blocking: 1×10^{-4} X-ray to far-IR
Center wavelength:	Temperature range: -50 to +70°C (specified @ 23°C)
1nm: +0.2, -0nm	
3nm: +0.5, -0nm	
10nm: +3, -0nm	
40nm: +10, -0nm	



 NARROWBAND INTERFERENCE FILTER

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Laser Line Interference Filters

Laser Type	Wavelength (nm)	Bandwidth (nm)	Minimum Transmittance (%)	Price	PART NUMBER
N ₂	337.1	3.0	20.0	\$ 365.00	079-0440
N ₂	337.1	10.0	25.0	\$ 221.00	079-0450
YAG(3)	355.0	10.0	25.0	\$ 194.00	079-0490
HeCd	441.6	1.0	30.0	\$ 252.00	079-0660
HeCd	441.6	3.0	35.0	\$ 189.00	079-0670
HeCd	441.6	10.0	45.0	\$ 126.00	079-0680
Ar Ion	457.9	1.0	30.0	\$ 252.00	079-0790
Ar Ion	457.9	3.0	35.0	\$ 189.00	079-0880
Ar Ion	457.9	10.0	45.0	\$ 126.00	079-0890
Ar Ion	488.0	1.0	40.0	\$ 252.00	079-1110
Ar Ion	488.0	3.0	45.0	\$ 189.00	079-1120
Ar Ion	488.0	10.0	50.0	\$ 126.00	079-1130
Ar Ion	514.5	1.0	40.0	\$ 252.00	079-1170
Ar Ion	514.5	3.0	45.0	\$ 189.00	079-1180
Ar Ion	514.5	10.0	50.0	\$ 126.00	079-1190
YAG(2)	532.0	1.0	40.0	\$ 252.00	079-1220
YAG(2)	532.0	3.0	45.0	\$ 189.00	079-1230
YAG(2)	532.0	10.0	50.0	\$ 126.00	079-1240
HeNe	632.8	1.0	40.0	\$ 252.00	079-1360
HeNe	632.8	3.0	45.0	\$ 189.00	079-1370
HeNe	632.8	10.0	50.0	\$ 126.00	079-1380
Kr	647.1	3.0	45.0	\$ 189.00	079-1440
Kr	647.1	10.0	50.0	\$ 126.00	079-1450
Diode	670.0	10.0	50.0	\$ 126.00	079-1490
Ruby	694.3	10.0	50.0	\$ 126.00	079-1560
Diode	780.0	10.0	45.0	\$ 137.00	079-1680
Diode	810.0	10.0	45.0	\$ 137.00	079-1880
Diode	830.0	10.0	45.0	\$ 137.00	079-2230
YAG	1064.0	1.0	30.0	\$ 347.00	079-2390
YAG	1064.0	3.0	35.0	\$ 299.00	079-2440
YAG	1064.0	10.0	40.0	\$ 163.00	079-2450
Diode	1300.0	10.0	35.0	\$ 275.00	079-2460
Diode	1500.0	10.0	30.0	\$ 336.00	079-2480
Diode	1550.0	10.0	30.0	\$ 336.00	079-2550

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Filter & Apertures

If you need a filter for a different laser line please call us.

Spectral Line Interference Filters

Spectral Line	Wavelength (nm)	Bandwidth (nm)	Minimum Transmittance (%)	Price	PART NUMBER
Zn	214.0	10.0	12.0	\$ 263.00	079-0230
Cd	228.0	10.0	15.0	\$ 263.00	079-0240
Ni	232.0	10.0	15.0	\$ 263.00	079-0250
Co	239.0	10.0	15.0	\$ 221.00	079-0260
Hg	253.7	10.0	12.0	\$ 221.00	079-0270
Hg	265.0	10.0	12.0	\$ 221.00	079-0280
Hg	280.0	10.0	12.0	\$ 221.00	079-0290
Hg	289.0	10.0	15.0	\$ 221.00	079-0330
Hg	296.7	10.0	15.0	\$ 221.00	079-0340
Zn	307.1	10.0	15.0	\$ 221.00	079-0360
Hg	313.0	10.0	15.0	\$ 221.00	079-0370

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Spectral Line Interference Filters (continued)

Spectral Line	Wavelength (nm)	Bandwidth (nm)	Minimum Transmittance (%)	Price	PART NUMBER
Cd	326.0	10.0	25.0	\$ 221.00	079-0380
Hg	334.0	10.0	25.0	\$ 221.00	079-0390
Hg	365.0	10.0	25.0	\$ 194.00	079-0550
Hg	404.7	10.0	40.0	\$ 126.00	079-0580
Hg	435.8	10.0	40.0	\$ 126.00	079-0590
Cs	455.5	10.0	45.0	\$ 126.00	079-0780
H	486.1	10.0	45.0	\$ 126.00	079-0990
Cd	508.5	10.0	50.0	\$ 126.00	079-1160
Ti	535.0	10.0	50.0	\$ 126.00	079-1250
Hg	546.1	10.0	50.0	\$ 126.00	079-1260
Hg	577.0	10.0	50.0	\$ 126.00	079-1290
Na	589.3	10.0	50.0	\$ 126.00	079-1330
Zn	636.2	10.0	50.0	\$ 126.00	079-1390
H alpha	656.3	10.0	50.0	\$ 126.00	079-1480
K	766.5	10.0	45.0	\$ 137.00	079-1670
Rb	794.7	10.0	45.0	\$ 137.00	079-1770
GaAs	905.0	10.0	45.0	\$ 137.00	079-2330
Hg	1014.0	10.0	40.0	\$ 168.00	079-2380

Visible and Near IR Range Interference Filters

Wavelength (nm)	Bandwidth (nm)	Minimum Transmittance (%)	Price	PART NUMBER
300.0	10.0	15.0	\$ 221.00	079-0350
350.0	10.0	25.0	\$ 194.00	079-0470
350.0	40.0	25.0	\$ 194.00	079-0480
400.0	10.0	40.0	\$ 126.00	079-0560
400.0	40.0	40.0	\$ 126.00	079-0570
450.0	10.0	45.0	\$ 126.00	079-0690
450.0	40.0	50.0	\$ 126.00	079-0770
500.0	10.0	50.0	\$ 126.00	079-1140
500.0	40.0	50.0	\$ 126.00	079-1150
550.0	10.0	50.0	\$ 126.00	079-1270
550.0	40.0	50.0	\$ 126.00	079-1280
600.0	10.0	50.0	\$ 126.00	079-1340
600.0	40.0	50.0	\$ 126.00	079-1350
650.0	10.0	50.0	\$ 126.00	079-1460
650.0	40.0	50.0	\$ 126.00	079-1470
700.0	10.0	50.0	\$ 126.00	079-1570
700.0	40.0	50.0	\$ 126.00	079-1580
750.0	10.0	45.0	\$ 137.00	079-1590
750.0	40.0	40.0	\$ 137.00	079-1660
800.0	10.0	45.0	\$ 137.00	079-1780
800.0	40.0	45.0	\$ 137.00	079-1790
850.0	10.0	45.0	\$ 137.00	079-2250
850.0	40.0	45.0	\$ 137.00	079-2260
900.0	10.0	45.0	\$ 137.00	079-2270
900.0	40.0	45.0	\$ 137.00	079-2280
950.0	10.0	45.0	\$ 137.00	079-2340
950.0	40.0	40.0	\$ 137.00	079-2350
1000.0	10.0	40.0	\$ 168.00	079-2360
1000.0	40.0	40.0	\$ 168.00	079-2370

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Long and Short Pass Edge Filters

- High transmission and high rejection for complete isolation
- Available at every 50nm throughout the visible and near-IR
- Cut-on and cut-off wavelengths guaranteed to within 10nm
- May be tilt tuned to shorter cut-on/cut-off wavelengths



Edge filters may be tilt tuned just as narrowband filters. The specified center wavelength will shift 50nm towards the blue for increasing angles of incidence. All of these edge filters may be tuned from their center wavelength to the next lower wavelength range.

These are interference filters which provide a sharp cut-off either above or below a particular wavelength. They are useful for isolating regions of the spectrum.

These filters are specified by their center (50% transmission) wavelength. The transmission of the long pass filters is 85% from a wavelength that is 3% greater than the specified wavelength to 2000nm. The transmission of the short pass filters is 85% from a wavelength that is 3% less than the specified wavelength to 425nm (except for the 400nm filter). The width of the transition from cut-on to cut-off is typically 6% or less of the center (specified) wavelength.

The cut-on/cut-off point is shifted to shorter wavelength if the filter is tilted from the normal. This feature can be useful for fine tuning.

Specifications & Tolerances

Diameter: 25mm +0, -0.5mm
 Av. Transmission: 85% (from 50% point)
 Parallelism: 3arcmin
 Cut-on/off: ± 10 nm
 Thickness: ~ 4mm Long Pass
 ~ 1mm Short Pass

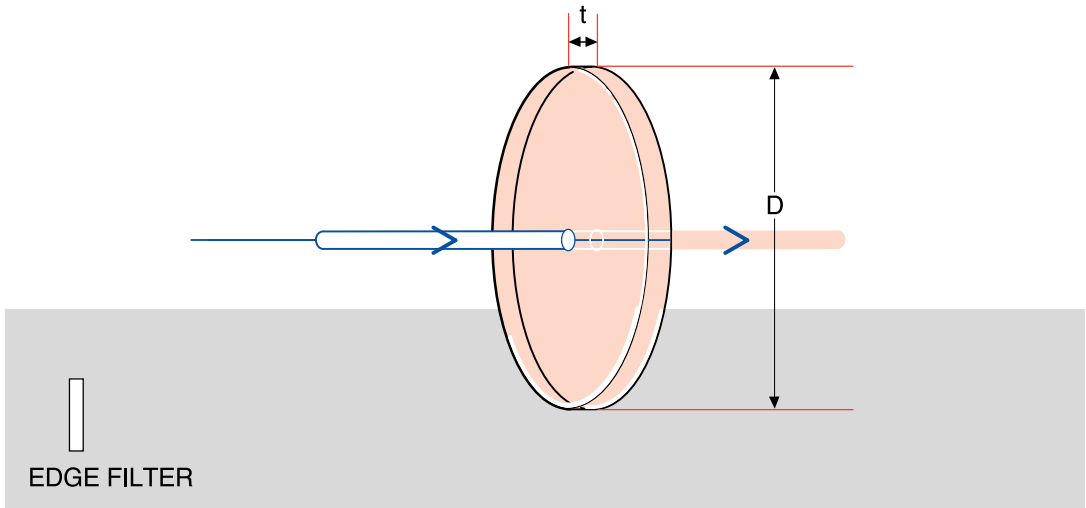
Clear aperture: >95% diameter
 Cut slope: 6% max
 Av. Rejection: 99% (from 50% point)
 Surface quality: 80-50
 Temperature range: -50 to +70°C

These filters are unmounted.

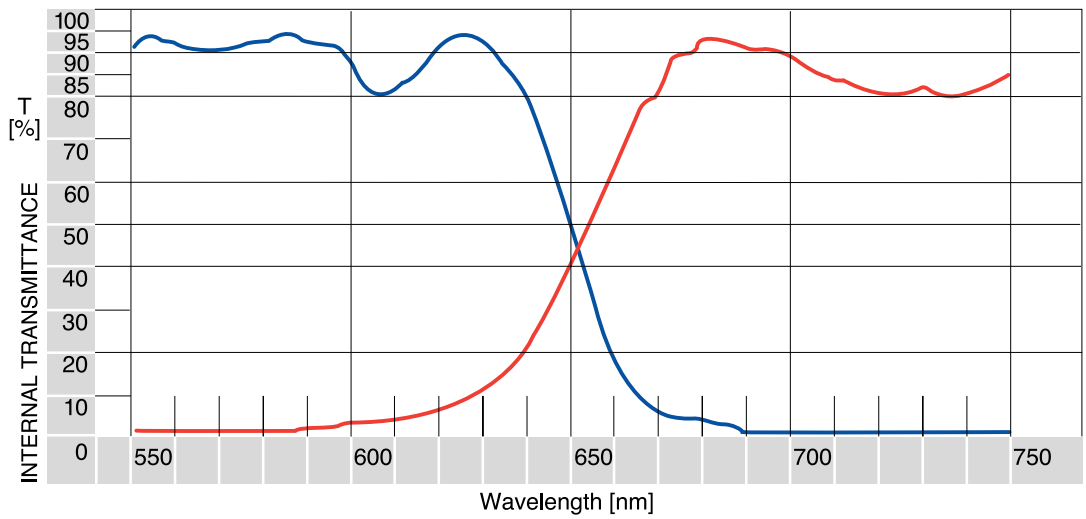
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- Achromatic Doublets
- Multi-Element
- Micro Optics
- Mirrors
- Prisms
- Substrates & Windows
- Beamsplitters
- Polarizers
- Filter & Apertures**



To keep the cut-on/cut-off transition as narrow as possible, these filters should be used in collimated or near-collimated light.



EDGE FILTER TRANSMITTANCE

Short Pass ————
Long Pass ————

		F I L T E R T Y P E	
Long and Short Pass Edge Filters		LONG PASS	SHORT PASS
Wavelength Cut-off (nm)	Price	PART NUMBER	PART NUMBER
400.0	\$ 103.00	079-3330	079-4440
450.0	\$ 103.00	079-3340	079-4450
500.0	\$ 103.00	079-3350	079-4460
550.0	\$ 103.00	079-3360	079-4470
600.0	\$ 103.00	079-3370	079-4480
650.0	\$ 103.00	079-3380	079-4490
700.0	\$ 103.00	079-3390	079-4550
750.0	\$ 103.00	079-3440	079-4560
800.0	\$ 103.00	079-3450	079-4570
850.0	\$ 103.00	079-3460	079-4580
900.0	\$ 103.00	079-3470	079-4590
950.0	\$ 103.00	079-3480	079-4660
1000.0	\$ 103.00	079-3490	079-4670

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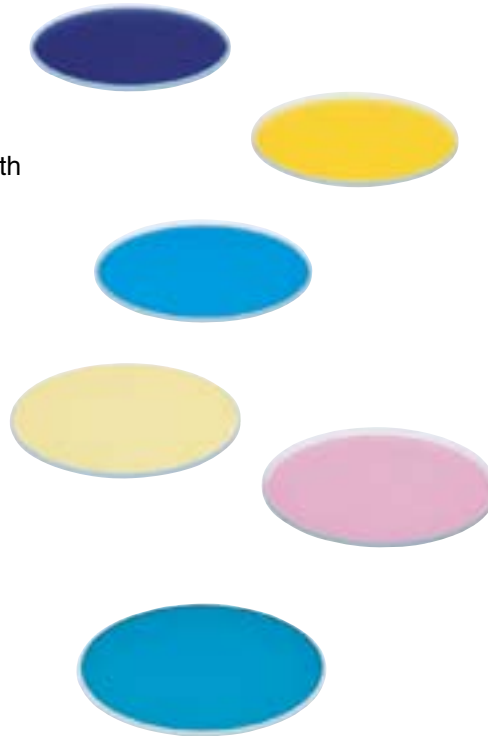
Filter & Apertures

Dichroic Process Filters

- These multilayer thin-film dielectric coatings provide precision color control
- Will not fade or degrade with time - unlike organic or gelatin filters
- Available in both additive and subtractive configurations

These color filters are made for color process work where color consistency and stability are important. The multilayer dielectric coatings are hard and durable and will not fade or degrade with time as other filter materials often do.

The subtractive dichroic color process filters are useful for separating colors prior to printing or other processing or any other time one wishes to remove a spectral region from an imaging system. The additive dichroic filters are often used in three-color projection systems where the original images are produced by RGB phosphors. These filters have a glass substrate and they are not mounted.



Specifications & Tolerances

Diameter: 25mm+0, -0.25mm

Clear aperture: 95%

Parallelism: 3arcmin

Surface quality: 80-50

Thickness: 1mm \pm 0.25mm

Temperature range: -50 to +100°C

These filters are unmounted.



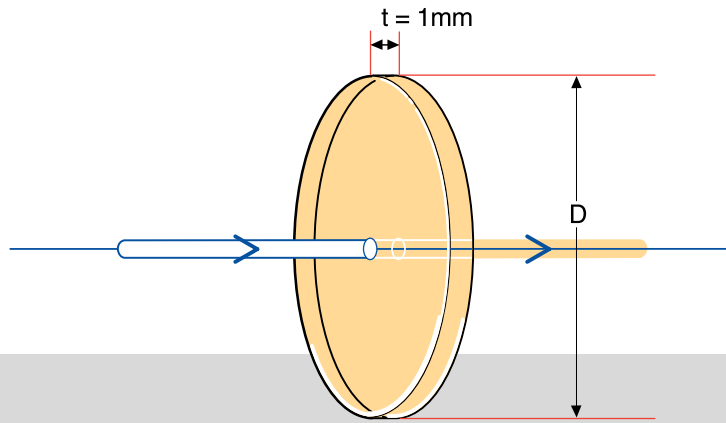
Our extensive metrology capabilities ensure that our products will meet or exceed their specifications.

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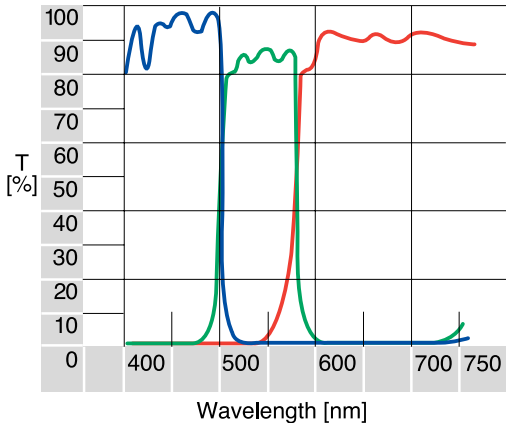
 **OptoSigma[®]**

OPTICAL COMPONENTS

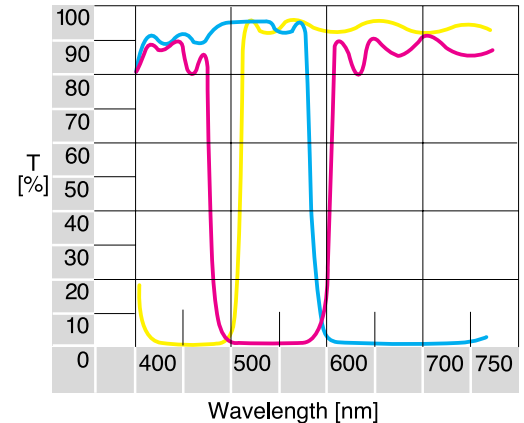
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- Polarizers
- Filter & Apertures**



DICHROIC FILTER



DICHROIC FILTERS (additive)
 BLUE ———
 GREEN ———
 RED ———



DICHROIC FILTERS (subtractive)
 YELLOW ———
 MAGENTA ———
 CYAN ———

Dichroic Process Filters

Color	Type	Diameter (mm)	Price	PART NUMBER
Blue	Additive	25.0	\$ 103.00	079-0010
Green	Additive	25.0	\$ 103.00	079-0020
Red	Additive	25.0	\$ 103.00	079-0030
Yellow	Subtractive	25.0	\$ 103.00	079-0040
Magenta	Subtractive	25.0	\$ 103.00	079-0050
Cyan	Subtractive	25.0	\$ 103.00	079-0060

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Please contact us if you need OEM quantities of these filters.

Metallic Neutral Density Filters

- Metallic films produce highly neutral transmission
- Useful for broadband attenuation
- BK7 and Fused Silica substrates for visible and Ultra-Violet applications
- Mounted and unmounted available



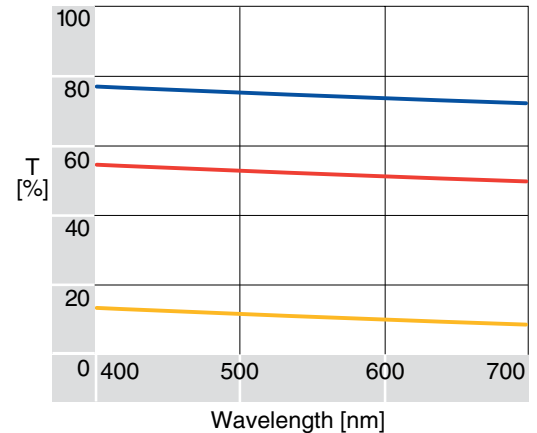
Specifications & Tolerances

Diameter: +0, -0.25mm
 Parallelism: 1arcmin
 Surface flatness: 1λ

Clear aperture: 95%
 Thickness: 2mm \pm 0.2mm
 Surface quality: 60-40

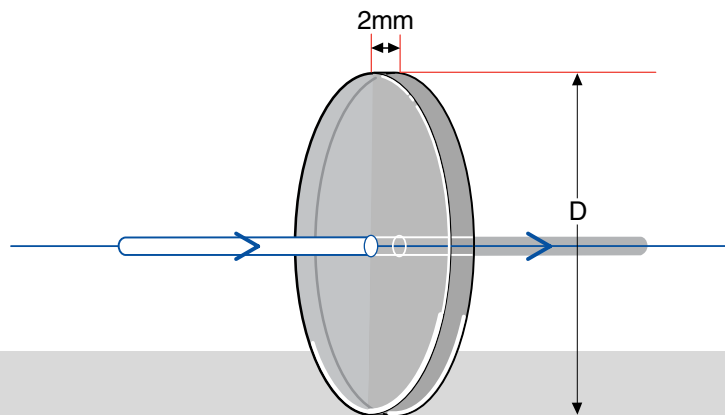
These metallic neutral density filters offer the best neutral density over a broad spectral range. A substantial portion of the incident radiation is rejected by reflection rather than absorption, thus reducing the problematic heating found in the absorptive type neutral density filters. These coatings are offered on both BK7 optical glass and synthetic fused silica substrates. BK7 absorbs strongly below 350nm, therefore, synthetic fused silica should be used for applications in the Ultra-Violet.

Mounted and unmounted filters are offered in 25, 30 and 50mm diameters.



METALLIC NEUTRAL DENSITY FILTER
 TRANSMITTANCE - GLASS

078-0670/0065/0145
 078-0650/0060/0140
 078-0610/0040/0120



REFLECTIVE NEUTRAL DENSITY FILTER

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Metallic Neutral Density Filters, Mounted

G L A S S

Wavelength Range (nm)	Diameter, D (mm)	Thickness (mm)	Material	Optical Density (OD)	Transmittance @ Center λ (%)	Price	PART NUMBER
200-400	25.0	5.0	SFS	3.00	0.1	\$ 135.00	078-2410
200-400	25.0	5.0	SFS	2.00	1	\$ 118.00	078-2415
200-400	25.0	5.0	SFS	1.30	5	\$ 110.00	078-2420
200-400	25.0	5.0	SFS	1.00	10	\$ 88.00	078-2425
200-400	25.0	5.0	SFS	0.70	20	\$ 83.00	078-2430
200-400	25.0	5.0	SFS	0.50	30	\$ 87.00	078-2435
200-400	25.0	5.0	SFS	0.40	40	\$ 87.00	078-2440
200-400	25.0	5.0	SFS	0.30	50	\$ 87.00	078-2445
200-400	25.0	5.0	SFS	0.20	60	\$ 87.00	078-2450
200-400	25.0	5.0	SFS	0.15	70	\$ 87.00	078-2455
200-400	25.0	5.0	SFS	0.10	80	\$ 87.00	078-2460
200-400	25.0	5.0	SFS	0.04	92	\$ 48.00	078-2465
200-400	30.0	5.0	SFS	3.00	0.1	\$ 155.00	078-2610
200-400	30.0	5.0	SFS	2.00	1	\$ 135.00	078-2615
200-400	30.0	5.0	SFS	1.30	5	\$ 130.00	078-2620
200-400	30.0	5.0	SFS	1.00	10	\$ 110.00	078-2625
200-400	30.0	5.0	SFS	0.70	20	\$ 110.00	078-2630
200-400	30.0	5.0	SFS	0.50	30	\$ 110.00	078-2635
200-400	30.0	5.0	SFS	0.40	40	\$ 110.00	078-2640
200-400	30.0	5.0	SFS	0.30	50	\$ 110.00	078-2645
200-400	30.0	5.0	SFS	0.20	60	\$ 110.00	078-2650
200-400	30.0	5.0	SFS	0.15	70	\$ 110.00	078-2655
200-400	30.0	5.0	SFS	0.10	80	\$ 110.00	078-2660
200-400	30.0	5.0	SFS	0.04	92	\$ 62.00	078-2665
200-400	52.0	5.0	SFS	3.00	0.1	\$ 200.00	078-2710
200-400	52.0	5.0	SFS	2.00	1	\$ 185.00	078-2715
200-400	52.0	5.0	SFS	1.30	5	\$ 165.00	078-2720
200-400	52.0	5.0	SFS	1.00	10	\$ 155.00	078-2725
200-400	52.0	5.0	SFS	0.70	20	\$ 155.00	078-2730
200-400	52.0	5.0	SFS	0.50	30	\$ 155.00	078-2735
200-400	52.0	5.0	SFS	0.40	40	\$ 155.00	078-2740
200-400	52.0	5.0	SFS	0.30	50	\$ 155.00	078-2745
200-400	52.0	5.0	SFS	0.20	60	\$ 155.00	078-2750
200-400	52.0	5.0	SFS	0.15	70	\$ 155.00	078-2755
200-400	52.0	5.0	SFS	0.10	80	\$ 155.00	078-2760
200-400	52.0	5.0	SFS	0.04	92	\$ 95.00	078-2765
400-700	25.0	5.0	BK7	3.00	0.1	\$ 65.00	078-3010
400-700	25.0	5.0	BK7	2.00	1	\$ 65.00	078-3015
400-700	25.0	5.0	BK7	1.30	5	\$ 65.00	078-3020
400-700	25.0	5.0	BK7	1.00	10	\$ 60.00	078-3025
400-700	25.0	5.0	BK7	0.70	20	\$ 60.00	078-3030
400-700	25.0	5.0	BK7	0.50	30	\$ 60.00	078-3035
400-700	25.0	5.0	BK7	0.40	40	\$ 60.00	078-3040
400-700	25.0	5.0	BK7	0.30	50	\$ 60.00	078-3045
400-700	25.0	5.0	BK7	0.20	60	\$ 60.00	078-3050
400-700	25.0	5.0	BK7	0.15	70	\$ 60.00	078-3055
400-700	25.0	5.0	BK7	0.10	80	\$ 60.00	078-3060
400-700	25.0	5.0	BK7	0.04	92	\$ 30.00	078-3065
400-700	30.0	5.0	BK7	3.00	0.1	\$ 80.00	078-3210
400-700	30.0	5.0	BK7	2.00	1	\$ 75.00	078-3215

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Metallic Neutral Density Filters, Mounted (continued)

G L A S S

Wavelength Range (nm)	Diameter, D (mm)	Thickness (mm)	Material	Optical Density (OD)	Transmittance @ Center λ (%)	Price	PART NUMBER
400-700	30.0	5.0	BK7	1.30	5	\$ 75.00	078-3220
400-700	30.0	5.0	BK7	1.00	10	\$ 80.00	078-3225
400-700	30.0	5.0	BK7	0.70	20	\$ 80.00	078-3230
400-700	30.0	5.0	BK7	0.50	30	\$ 80.00	078-3235
400-700	30.0	5.0	BK7	0.40	40	\$ 80.00	078-3240
400-700	30.0	5.0	BK7	0.30	50	\$ 80.00	078-3245
400-700	30.0	5.0	BK7	0.20	60	\$ 80.00	078-3250
400-700	30.0	5.0	BK7	0.15	70	\$ 80.00	078-3255
400-700	30.0	5.0	BK7	0.10	80	\$ 80.00	078-3260
400-700	30.0	5.0	BK7	0.04	92	\$ 45.00	078-3265
400-700	52.0	5.0	BK7	3.00	0.1	\$ 130.00	078-3310
400-700	52.0	5.0	BK7	2.00	1	\$ 130.00	078-3315
400-700	52.0	5.0	BK7	1.30	5	\$ 110.00	078-3320
400-700	52.0	5.0	BK7	1.00	10	\$ 110.00	078-3325
400-700	52.0	5.0	BK7	0.70	20	\$ 110.00	078-3330
400-700	52.0	5.0	BK7	0.50	30	\$ 110.00	078-3335
400-700	52.0	5.0	BK7	0.40	40	\$ 110.00	078-3340
400-700	52.0	5.0	BK7	0.30	50	\$ 110.00	078-3345
400-700	52.0	5.0	BK7	0.20	60	\$ 110.00	078-3350
400-700	52.0	5.0	BK7	0.15	70	\$ 110.00	078-3355
400-700	52.0	5.0	BK7	0.10	80	\$ 110.00	078-3360
400-700	52.0	5.0	BK7	0.04	92	\$ 55.00	078-3365

Metallic Neutral Density Filters, Unmounted

G L A S S

Wavelength Range (nm)	Diameter, D (mm)	Thickness (mm)	Material	Optical Density (OD)	Transmittance @ Center λ (%)	Price	PART NUMBER
200-400	20.0	2.0	SFS	3.00	0.1	\$ 90.00	078-0920
200-400	20.0	2.0	SFS	2.00	1	\$ 80.00	078-0930
200-400	20.0	2.0	SFS	1.30	5	\$ 80.00	078-0935
200-400	20.0	2.0	SFS	1.00	10	\$ 80.00	078-0940
200-400	20.0	2.0	SFS	0.70	20	\$ 80.00	078-0945
200-400	20.0	2.0	SFS	0.50	30	\$ 80.00	078-0950
200-400	20.0	2.0	SFS	0.40	40	\$ 80.00	078-0955
200-400	20.0	2.0	SFS	0.30	50	\$ 80.00	078-0960
200-400	20.0	2.0	SFS	0.20	60	\$ 80.00	078-0965
200-400	20.0	2.0	SFS	0.15	70	\$ 80.00	078-0970
200-400	20.0	2.0	SFS	0.10	80	\$ 80.00	078-0975
200-400	20.0	2.0	SFS	0.04	92	\$ 40.00	078-0980
200-400	25.0	2.0	SFS	3.00	0.1	\$ 100.00	078-0810
200-400	25.0	2.0	SFS	2.00	1	\$ 89.00	078-0820
200-400	25.0	2.0	SFS	1.30	5	\$ 84.00	078-0830
200-400	25.0	2.0	SFS	1.00	10	\$ 84.00	078-0835
200-400	25.0	2.0	SFS	0.70	20	\$ 84.00	078-0840
200-400	25.0	2.0	SFS	0.50	30	\$ 84.00	078-0845
200-400	25.0	2.0	SFS	0.40	40	\$ 84.00	078-0850
200-400	25.0	2.0	SFS	0.30	50	\$ 84.00	078-0855
200-400	25.0	2.0	SFS	0.20	60	\$ 84.00	078-0860
200-400	25.0	2.0	SFS	0.15	70	\$ 84.00	078-0865
200-400	25.0	2.0	SFS	0.10	80	\$ 84.00	078-0870
200-400	25.0	2.0	SFS	0.04	92	\$ 42.00	078-0875

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Metallic Neutral Density Filters, Unmounted (continued)

G L A S S

Wavelength Range (nm)	Diameter, D (mm)	Thickness (mm)	Material	Optical Density (OD)	Transmittance @ Center λ (%)	Price	PART NUMBER
200-400	30.0	2.0	SFS	3.00	0.1	\$ 110.00	078-0230
200-400	30.0	2.0	SFS	2.00	1	\$ 110.00	078-0240
200-400	30.0	2.0	SFS	1.30	5	\$ 105.00	078-0245
200-400	30.0	2.0	SFS	1.00	10	\$ 100.00	078-0250
200-400	30.0	2.0	SFS	0.70	20	\$ 100.00	078-0255
200-400	30.0	2.0	SFS	0.50	30	\$ 100.00	078-0260
200-400	30.0	2.0	SFS	0.40	40	\$ 100.00	078-0265
200-400	30.0	2.0	SFS	0.30	50	\$ 100.00	078-0270
200-400	30.0	2.0	SFS	0.20	60	\$ 100.00	078-0273
200-400	30.0	2.0	SFS	0.15	70	\$ 100.00	078-0275
200-400	30.0	2.0	SFS	0.10	80	\$ 100.00	078-0280
200-400	30.0	2.0	SFS	0.04	92	\$ 42.00	078-0290
200-400	50.0	2.0	SFS	3.00	0.1	\$ 147.00	078-0340
200-400	50.0	2.0	SFS	2.00	1	\$ 147.00	078-0350
200-400	50.0	2.0	SFS	1.30	5	\$ 142.00	078-0355
200-400	50.0	2.0	SFS	1.00	10	\$ 137.00	078-0360
200-400	50.0	2.0	SFS	0.70	20	\$ 137.00	078-0365
200-400	50.0	2.0	SFS	0.50	30	\$ 137.00	078-0370
200-400	50.0	2.0	SFS	0.40	40	\$ 137.00	078-0375
200-400	50.0	2.0	SFS	0.30	50	\$ 137.00	078-0380
200-400	50.0	2.0	SFS	0.20	60	\$ 137.00	078-0383
200-400	50.0	2.0	SFS	0.15	70	\$ 137.00	078-0385
200-400	50.0	2.0	SFS	0.10	80	\$ 137.00	078-0390
200-400	50.0	2.0	SFS	0.04	92	\$ 63.00	078-0440
400-700	15.0	2.0	BK7	3.00	0.1	\$ 54.00	078-0789
400-700	15.0	2.0	BK7	2.00	1	\$ 49.00	078-0790
400-700	15.0	2.0	BK7	1.30	5	\$ 44.00	078-0791
400-700	15.0	2.0	BK7	1.00	10	\$ 44.00	078-0792
400-700	15.0	2.0	BK7	0.70	20	\$ 38.00	078-0793
400-700	15.0	2.0	BK7	0.50	30	\$ 38.00	078-0794
400-700	15.0	2.0	BK7	0.40	40	\$ 38.00	078-0795
400-700	15.0	2.0	BK7	0.30	50	\$ 38.00	078-0796
400-700	15.0	2.0	BK7	0.20	60	\$ 38.00	078-0797
400-700	15.0	2.0	BK7	0.15	70	\$ 38.00	078-0798
400-700	15.0	2.0	BK7	0.10	80	\$ 38.00	078-0799
400-700	15.0	2.0	BK7	0.04	92	\$ 23.00	078-0800
400-700	20.0	2.0	BK7	3.00	0.1	\$ 58.00	078-0777
400-700	20.0	2.0	BK7	2.00	1	\$ 53.00	078-0778
400-700	20.0	2.0	BK7	1.30	5	\$ 48.00	078-0779
400-700	20.0	2.0	BK7	1.00	10	\$ 48.00	078-0780
400-700	20.0	2.0	BK7	0.70	20	\$ 42.00	078-0781
400-700	20.0	2.0	BK7	0.50	30	\$ 42.00	078-0782
400-700	20.0	2.0	BK7	0.40	40	\$ 42.00	078-0783
400-700	20.0	2.0	BK7	0.30	50	\$ 42.00	078-0784
400-700	20.0	2.0	BK7	0.20	60	\$ 42.00	078-0785
400-700	20.0	2.0	BK7	0.15	70	\$ 42.00	078-0786
400-700	20.0	2.0	BK7	0.10	80	\$ 42.00	078-0787
400-700	20.0	2.0	BK7	0.04	92	\$ 27.00	078-0788
400-700	25.0	2.0	BK7	3.00	0.1	\$ 63.00	078-0710
400-700	25.0	2.0	BK7	2.00	1	\$ 58.00	078-0720

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Metallic Neutral Density Filters, Unmounted (continued)

G L A S S

Wavelength Range (nm)	Diameter, D (mm)	Thickness (mm)	Material	Optical Density (OD)	Transmittance @ Center λ (%)	Price	PART NUMBER
400-700	25.0	2.0	BK7	1.30	5	\$ 53.00	078-0730
400-700	25.0	2.0	BK7	1.00	10	\$ 53.00	078-0735
400-700	25.0	2.0	BK7	0.70	20	\$ 47.00	078-0740
400-700	25.0	2.0	BK7	0.50	30	\$ 47.00	078-0745
400-700	25.0	2.0	BK7	0.40	40	\$ 47.00	078-0750
400-700	25.0	2.0	BK7	0.30	50	\$ 47.00	078-0755
400-700	25.0	2.0	BK7	0.20	60	\$ 47.00	078-0760
400-700	25.0	2.0	BK7	0.15	70	\$ 47.00	078-0765
400-700	25.0	2.0	BK7	0.10	80	\$ 47.00	078-0770
400-700	25.0	2.0	BK7	0.04	92	\$ 32.00	078-0775
400-700	30.0	2.0	BK7	3.00	0.1	\$ 68.00	078-0020
400-700	30.0	2.0	BK7	2.00	1	\$ 68.00	078-0030
400-700	30.0	2.0	BK7	1.30	5	\$ 63.00	078-0035
400-700	30.0	2.0	BK7	1.00	10	\$ 58.00	078-0040
400-700	30.0	2.0	BK7	0.70	20	\$ 58.00	078-0045
400-700	30.0	2.0	BK7	0.50	30	\$ 58.00	078-0050
400-700	30.0	2.0	BK7	0.40	40	\$ 58.00	078-0055
400-700	30.0	2.0	BK7	0.30	50	\$ 58.00	078-0060
400-700	30.0	2.0	BK7	0.20	60	\$ 58.00	078-0063
400-700	30.0	2.0	BK7	0.15	70	\$ 58.00	078-0065
400-700	30.0	2.0	BK7	0.10	80	\$ 58.00	078-0070
400-700	30.0	2.0	BK7	0.04	92	\$ 32.00	078-0080
400-700	50.0	2.0	BK7	3.00	0.1	\$ 100.00	078-0090
400-700	50.0	2.0	BK7	2.00	1	\$ 100.00	078-0110
400-700	50.0	2.0	BK7	1.30	5	\$ 95.00	078-0115
400-700	50.0	2.0	BK7	1.00	10	\$ 89.00	078-0120
400-700	50.0	2.0	BK7	0.70	20	\$ 89.00	078-0125
400-700	50.0	2.0	BK7	0.50	30	\$ 89.00	078-0130
400-700	50.0	2.0	BK7	0.40	40	\$ 89.00	078-0135
400-700	50.0	2.0	BK7	0.30	50	\$ 89.00	078-0140
400-700	50.0	2.0	BK7	0.20	60	\$ 89.00	078-0143
400-700	50.0	2.0	BK7	0.15	70	\$ 89.00	078-0145
400-700	50.0	2.0	BK7	0.10	80	\$ 89.00	078-0150
400-700	50.0	2.0	BK7	0.04	92	\$ 42.00	078-0160

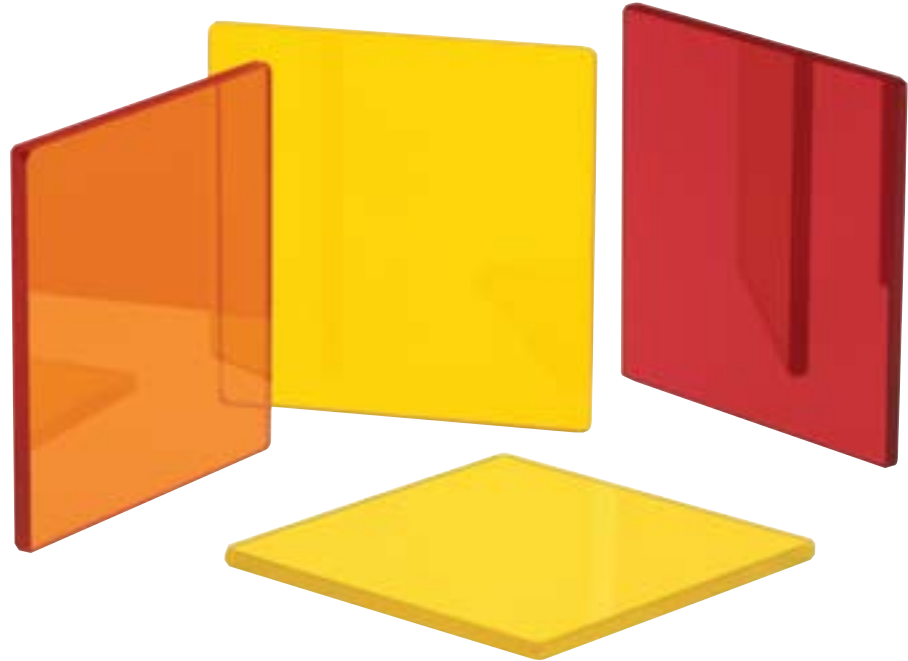
Optical density and transmittance are directly related by the expression $D = \log(1/T)$. We state both parameters in the table for your convenience.

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Colored Glass Filters

- Made from the finest quality color glasses
- All are available in standard 3mm thicknesses
- Ultra-Violet and IR cut-off filters help to protect polymer and organic devices
- Heat absorbing filters reduce thermal strain on downstream optics



Colored glass provides one of the simplest ways to isolate a portion of the spectrum. If you need to work within a specific spectral region and block other colors, glass filters provide a ready and economical solution.

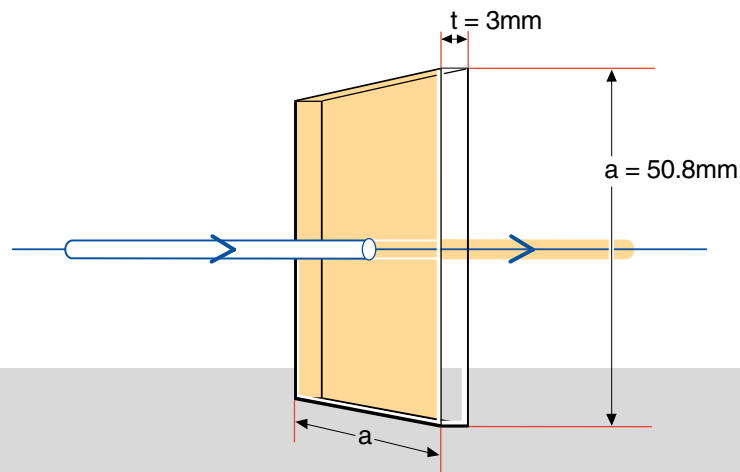
We offer a wide selection of colored glass filters. These are made from high quality optical colored glass. They are 2 inches square and unmounted.

See the following graphs for details of transmission characteristics.

Specifications & Tolerances

Side: 50.8 +0, -0.3mm
 Surface quality: 80-50

Thickness: 3.0 ±0.3mm

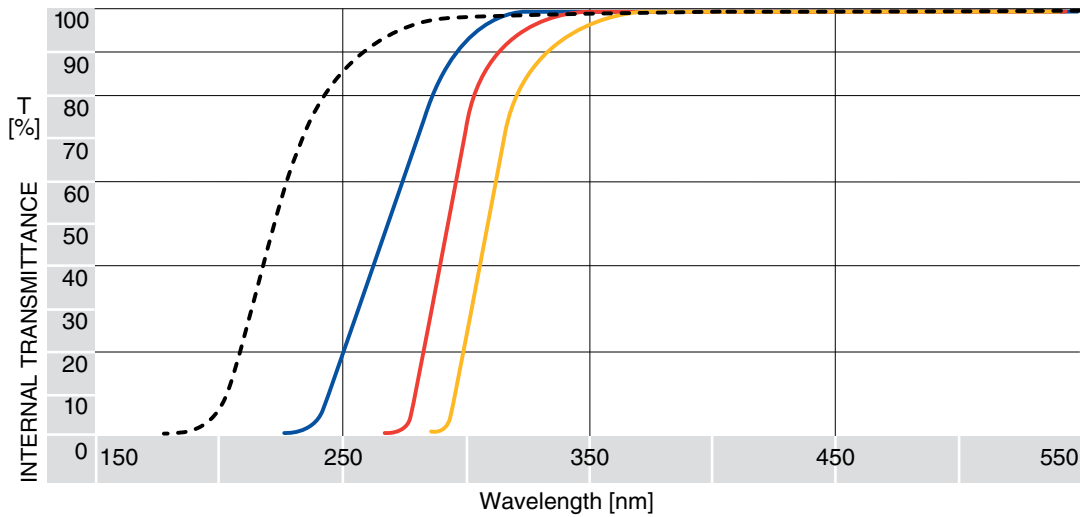


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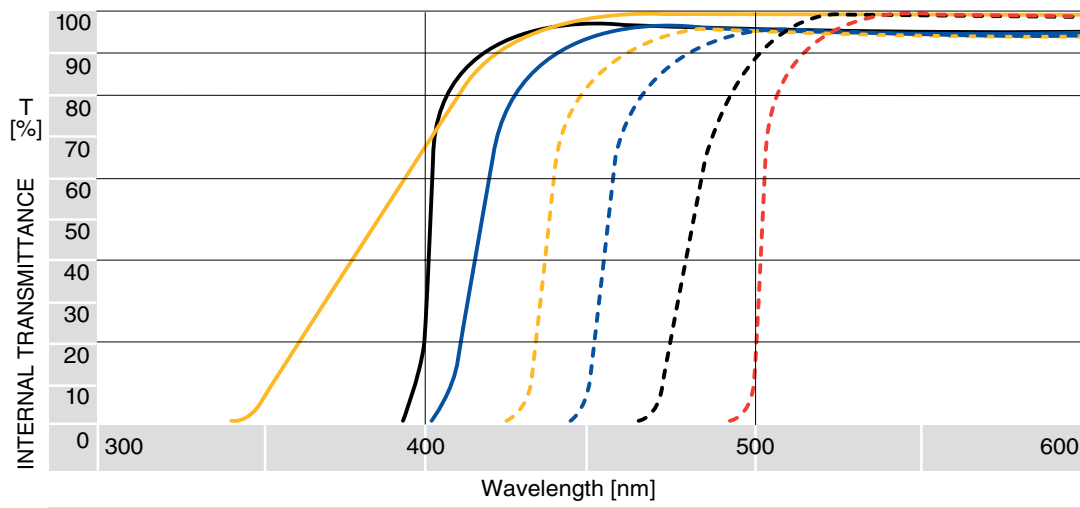
Filter & Apertures



TYPICAL INTERNAL TRANSMITTANCE
 ULTRA-VIOLET CUTOFF FILTERS (3mm thick) 077-1330 --- 077-1350 —
 077-1340 — 077-1360 —

Ultra-Violet Cut-off Filters

Type	Wavelength (nm)	Price	PART NUMBER
Ultra-Violet Cut-off	220.0	\$ 110.00	077-1330
Ultra-Violet Cut-off	280.0	\$ 74.00	077-1340
Ultra-Violet Cut-off	300.0	\$ 65.00	077-1350
Ultra-Violet Cut-off	320.0	\$ 55.00	077-1360



TYPICAL INTERNAL TRANSMITTANCE
 SHORTWAVE CUTOFF FILTERS (3mm thick) 077-1460 — 077-1480 — 077-1560 ---
 077-1470 — 077-1490 - - 077-1570 - -
 077-1550 - -

Short Wave Cut-off Filters

Type	Wavelength (nm)	Price	PART NUMBER
Shortwave Cut-off	390.0	\$ 58.00	077-1460
Shortwave Cut-off	400.0	\$ 58.00	077-1470
Shortwave Cut-off	420.0	\$ 58.00	077-1480
Shortwave Cut-off	440.0	\$ 58.00	077-1490
Shortwave Cut-off	460.0	\$ 58.00	077-1550
Shortwave Cut-off	480.0	\$ 58.00	077-1560
Shortwave Cut-off	500.0	\$ 58.00	077-1570

We are able to provide a broad range of high quality colored glasses. We list here only those popular colors that we keep in stock, but a considerably greater range of colors is available for OEM and medium volume requirements. If you need special shapes, sizes, colors, or thicknesses please contact us.

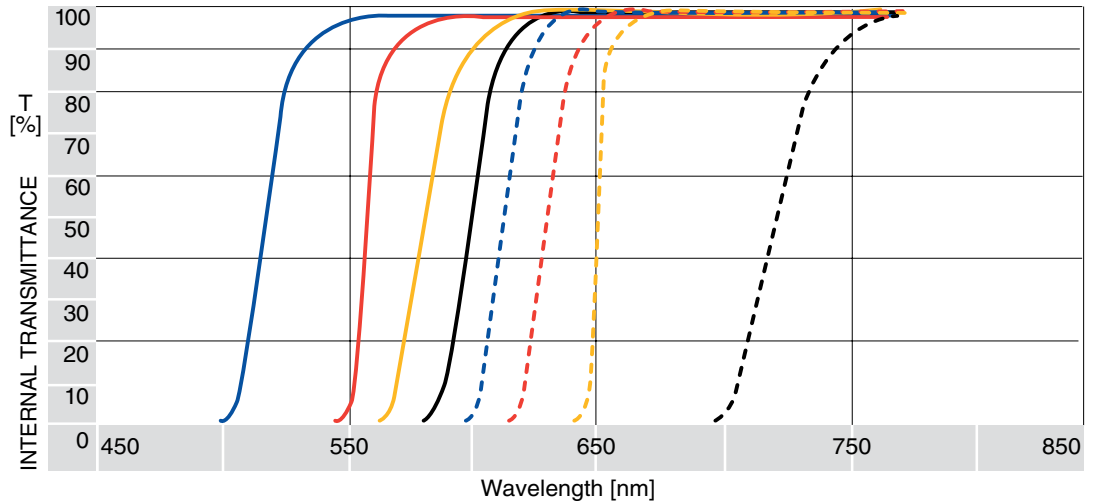
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Filter & Apertures

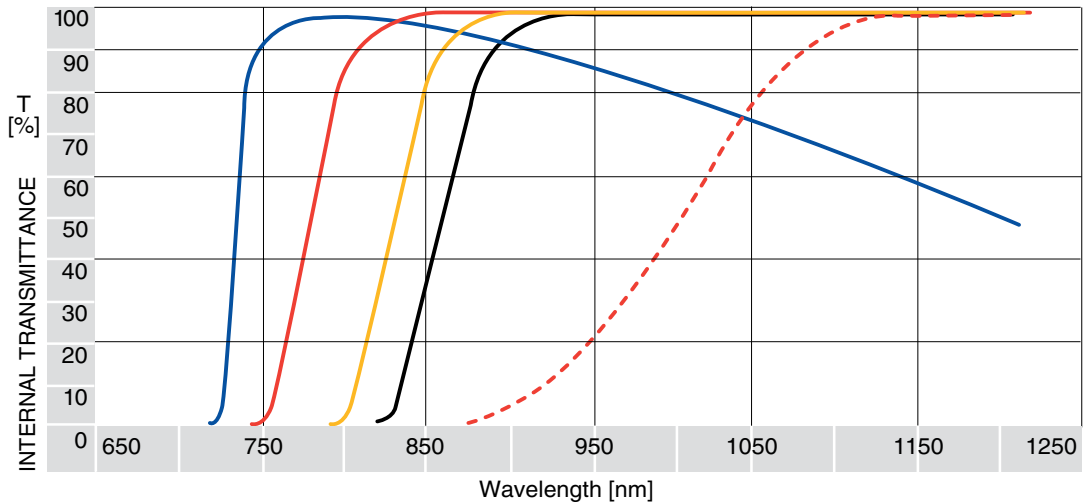


TYPICAL INTERNAL TRANSMITTANCE
ORANGE/RED FILTERS (3mm thick)

077-1580	—	077-1630	- - -
077-1590	—	077-1640	- - -
077-1610	—	077-1650	- - -
077-1620	—	077-1690	- - -

Colored Glass Filters

Type	Wavelength (nm)	Price	PART NUMBER
Orange Glass	520.0	\$ 61.00	077-1580
Orange Glass	540.0	\$ 61.00	077-1590
Orange Glass	560.0	\$ 61.00	077-1610
Red Glass	580.0	\$ 61.00	077-1620
Red Glass	600.0	\$ 61.00	077-1630
Red Glass	620.0	\$ 61.00	077-1640
Red Glass	640.0	\$ 61.00	077-1650
Red Glass	720.0	\$ 68.00	077-1690



TYPICAL INTERNAL TRANSMITTANCE
INFRA-RED TRANSMITTING FILTERS (3mm thick)

077-2290	—	077-2250	—
077-2220	—	077-2280	- - -
077-2240	—		

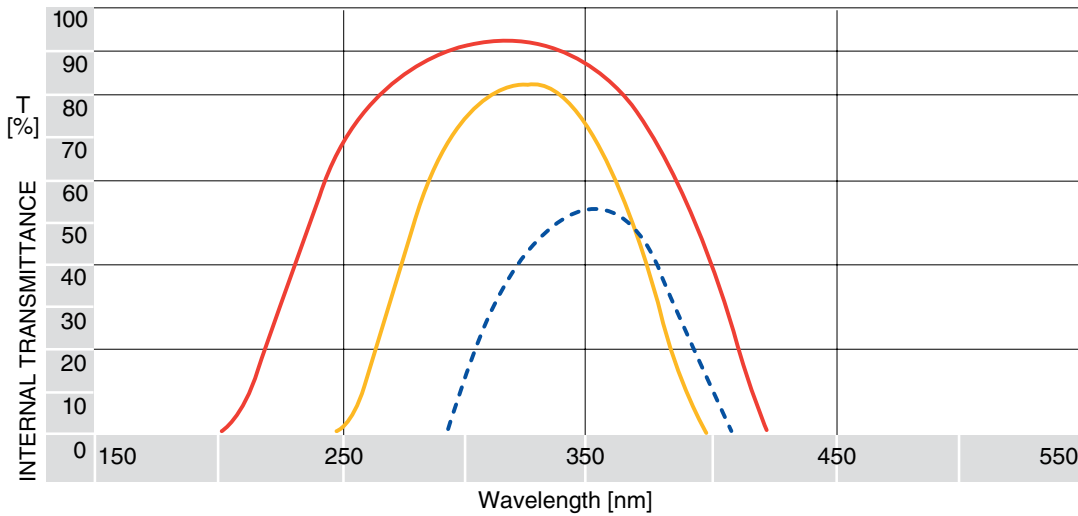
IR Transmitting Filters

Type	Wavelength (nm)	Price	PART NUMBER
IR Transmitting	730.0	\$ 58.00	077-2290
IR Transmitting	760.0	\$ 61.00	077-2220
IR Transmitting	830.0	\$ 61.00	077-2240
IR Transmitting	850.0	\$ 61.00	077-2250
IR Transmitting	1000.0	\$ 55.00	077-2280

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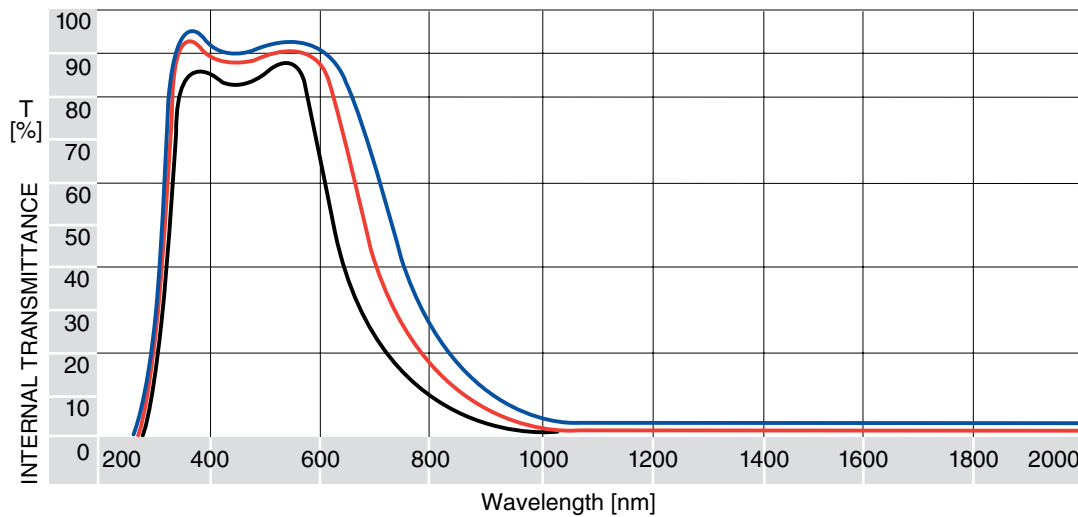
TYPICAL INTERNAL TRANSMITTANCE
ULTRA-VIOLET TRANSMITTING FILTERS
(3mm thick)

077-2330 ———
077-2340 ———
077-2350 - - - -

Ultra-Violet Transmitting Filters

Type	Wavelength (nm)	Price	PART NUMBER
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Ultra-Violet Transmitting	330.0	\$ 100.00	077-2330
Ultra-Violet Transmitting	340.0	\$ 110.00	077-2340
Ultra-Violet Transmitting	350.0	\$ 61.00	077-2350



TYPICAL INTERNAL TRANSMITTANCE
HEAT ABSORBING FILTERS (3mm thick)

077-2560 ——— 077-2550 ———
077-2570 ———

Heat Absorbing Filters

Type	Wavelength (nm)	Price	PART NUMBER
------	-----------------	-------	-------------

Heat Absorbing	—	\$ 68.00	077-2550
Heat Absorbing	—	\$ 74.00	077-2560
Heat Absorbing	—	\$ 68.00	077-2570

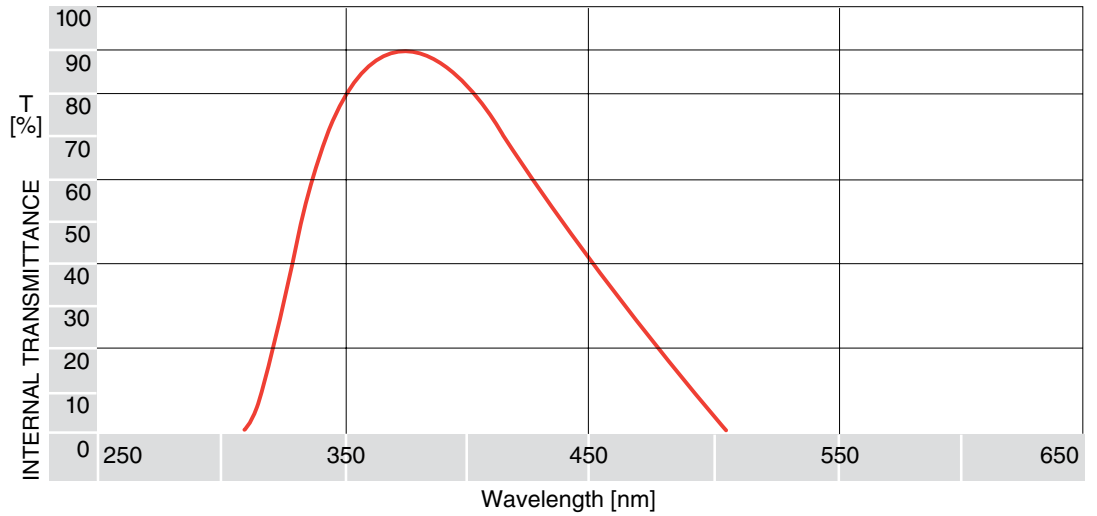
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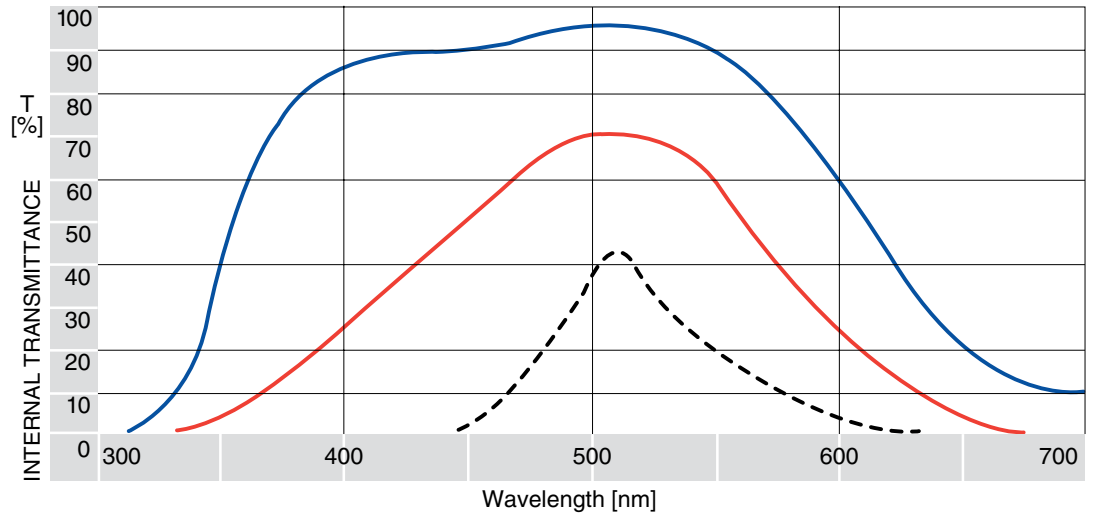
Filter & Apertures



TYPICAL INTERNAL TRANSMITTANCE
VIOLET/BLUE GLASS FILTERS (3mm thick) 077-3330

Colored Glass Filters

Type	Wavelength (nm)	Price	PART NUMBER
Violet Glass	380.0	\$ 55.00	077-3330



TYPICAL INTERNAL TRANSMITTANCE
GREEN GLASS FILTERS (3mm thick) 077-3550 077-3580 077-3560

Colored Glass Filters

Type	Wavelength (nm)	Price	PART NUMBER
Green Glass	500.0	\$ 55.00	077-3550
Green Glass	520.0	\$ 55.00	077-3560
Green Glass	-	\$ 55.00	077-3580

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