

Filter Sets

- **Short Pass/Long Pass Sets** permit waveband separation
- **Narrowband Sets** isolate spectral regions precisely
- **Attenuation Sets** provide a range of intensity reduction



These convenient filter sets offer the advantage of spectral or intensity modification to suit the particular circumstances. Often it is necessary to change the characteristics of a beam of light and it is useful to have a selection of calibrated filters on hand for this purpose. Our filter sets are supplied in a convenient storage binder together with their actual spectrophotometer traces. This way you are able to select filters for use singly or in combination to modify the incident light to suit your purpose.

We offer 6 different filter sets. Short-pass and long-pass filters can be combined to restrict the spectral region of interest. Our sets cover the spectrum using 13 filters at 50nm intervals from 400 to 1000nm. Two narrow band interference filter sets permit the isolation of very narrow spectral regions. We offer a 40nm halfwidth set and a 10nm halfwidth set. In each case there are 13 filters covering the spectrum from 400 to 1000nm. Attenuation filter sets are provided for the visible spectrum and for the 1064nm YAG line. The visible range set is made from neutral density glass while the YAG set is made from a range of different glasses calibrated to provide the exact required attenuation at the YAG wavelength. Nine filters cover transmittance values in 10% intervals from 10% to 90%.

The filters supplied in the narrowband and attenuation sets are all mounted in inch diameter (25mm) metal rings for convenience of mounting and handling. They are marked on the edges with the appropriate wavelength or transmittance.

Specifications & Tolerances

Mount diameter: 25.4mm+0-0.6mm	Surface quality: 80-50
Mount thickness: Ranging from 3.5 to 8.5mm	Wavelength increments: 50nm
Clear aperture: 21mm	Transmittance increments: 10%

For other specifications see the individual filter sections which follow.

Filter Sets

Type	Wavelengths (nm)	Bandwidth FWHM (nm)	Transmittance (%)	Price	PART NUMBER
Short pass (13 Filters)	400-1000	-	-	\$ 1,360.00	079-6660
Long Pass (13 Filters)	400-1000	-	-	\$ 1,360.00	079-6670
Narrowband-10 (13 Filters)	400-1000	10.0	40	\$ 1,760.00	079-6680
Narrowband-40 (13 Filters)	400-1000	40.0	45	\$ 1,760.00	079-6690
Attenuation-vis (9 Filters)	400-700	-	10-90	\$ 600.00	079-6610
Attenuation-YAG (9 Filters)	1064	-	10-90	\$ 610.00	079-6620

We can make up alternate sets of filters to your special order so please call if you need a custom filter set.

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.

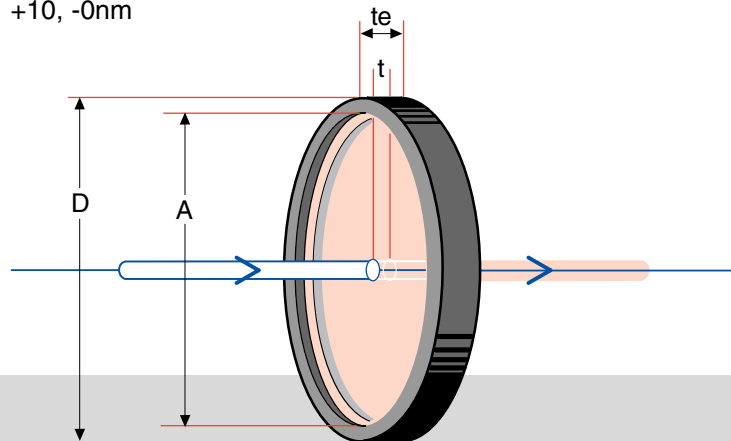


All interference filters are sensitive to the angle of incidence of the incoming beam. This can be a very useful attribute as it allows a certain amount of wavelength tuning to be done where appropriate. As a rule of thumb, all of our filters may be tilt-tuned toward the blue by about 10% of their center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

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com

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

Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

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

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com



Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

Filter & Apertures

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

ORDERING
&
TECHNICAL SUPPORT

(949) 851-5881

FAX (949) 851-5058

E-MAIL

sales@optosigma.com

WEB

www.optosigma.com



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

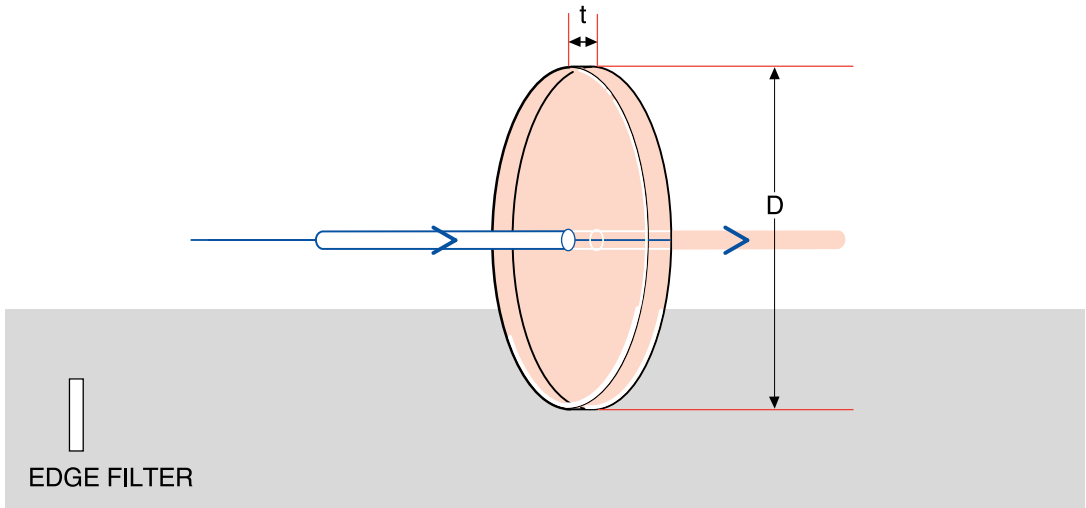
Clear aperture: >95% diameter
 Cut slope: 6% max
 Av. Rejection: 99% (from 50% point)
 Surface quality: 80-50
 Temperature range: -50 to +70°C

These filters are unmounted.

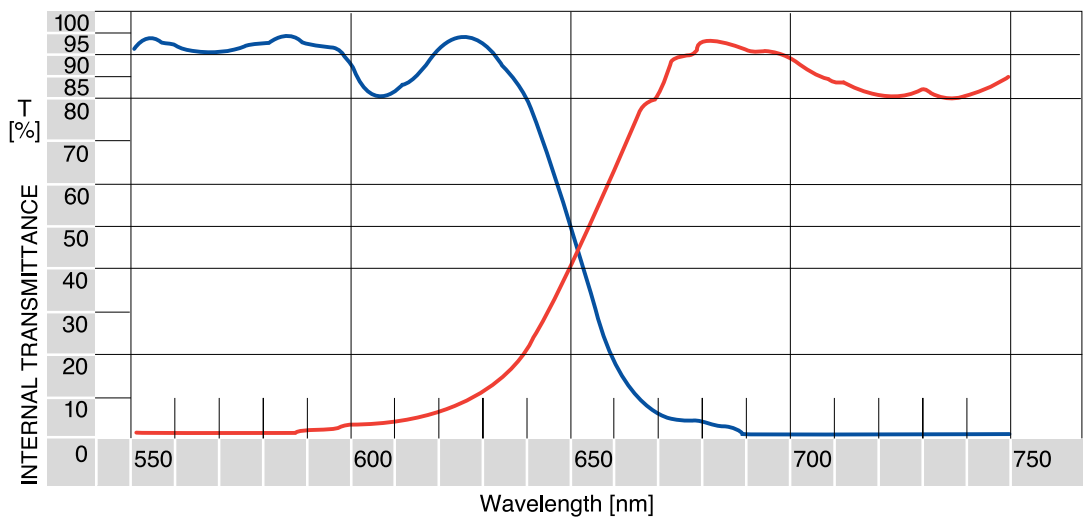
ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com

OPTICAL COMPONENTS

- Spherical Lenses
- Cylindrical Lenses
- Lens Kits
- 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

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com



Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

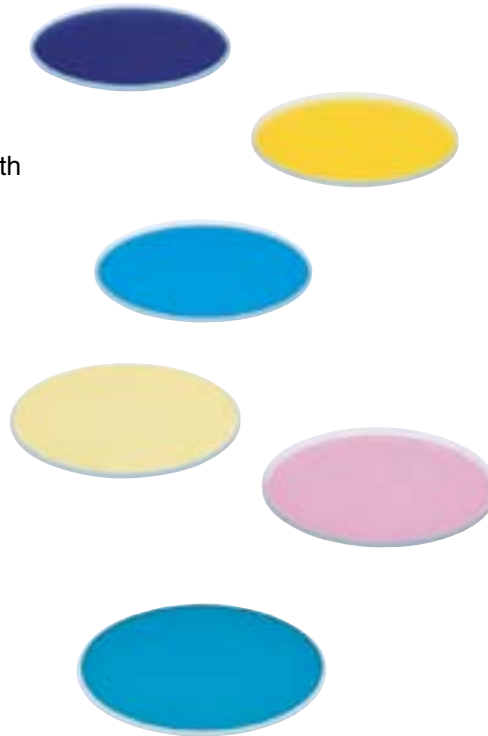
Filter & Apertures

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 ±0.25mm

Temperature range: -50 to +100°C

These filters are unmounted.



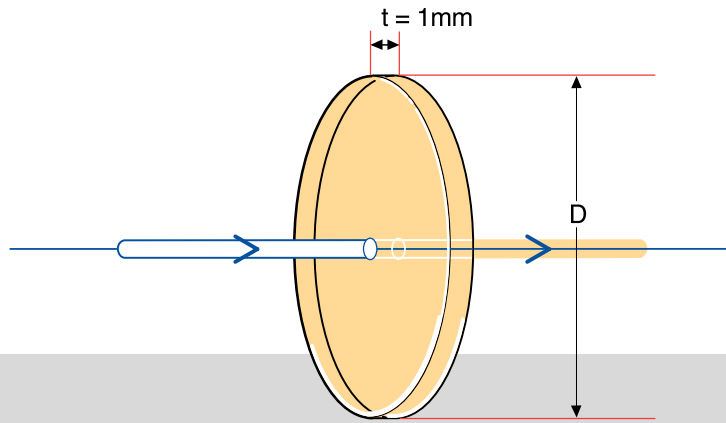
Our extensive metrology capabilities ensure that our products will meet or exceed their specifications.

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com

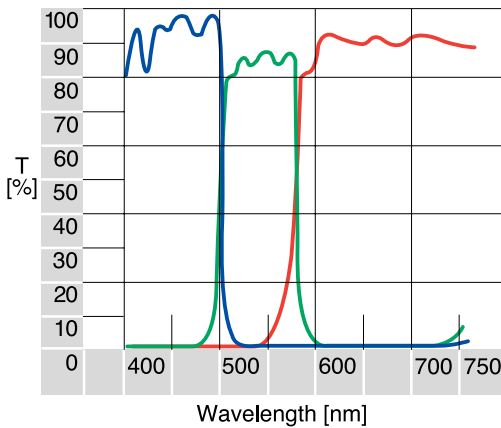
 **OptoSigma**[®]

OPTICAL COMPONENTS

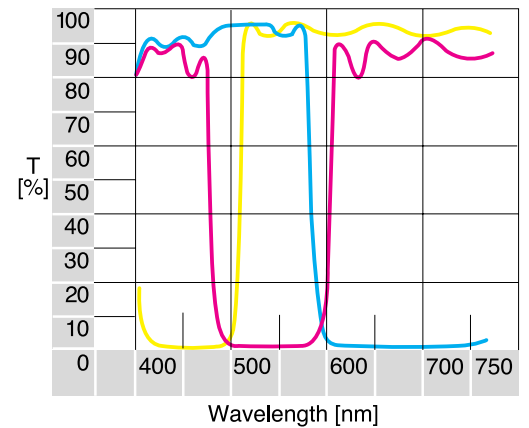
- Spherical Lenses
- Cylindrical Lenses
- Lens Kits
- Achromatic Doublets
- Multi-Element
- Micro Optics
- Mirrors
- Prisms
- Substrates & Windows
- Beamsplitters
- Polarizers
- Filter & Apertures



DICHOIC FILTER



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



DICHOIC 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

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com



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

Neutral Density Filter Wheels

- Convenient selection of ND filters from 0 to 3.0 OD
- Detent indexing for fast and easy positioning
- Pre-mounted filters reduce contamination from handling
- Double and single wheels for improved versatility



Our new indexed filter wheels contain a set of neutral density filters. These pre-mounted filters are available in complete 2-wheel or starter 1-wheel versions. Each filter wheel holds six, 1 inch (25mm) filters and is mechanically indexed with detents for ease of adjustment.

The 2-wheel version contains 10 filters of optical density 0.10, 0.22, 0.30, 0.40, 0.52, 1.00, 1.50, 2.00, 2.50. One space in each wheel is intentionally left empty so that the two filter wheels may be adjusted to provide optical densities from 0.0 to 3.0 in 0.1 increments. The 1-wheel version comes with 5 filters that allow for variation in optical density of 0 to 0.5 in 0.1 OD increments.

Both ND filter wheels may be configured conveniently to provide zero attenuation without removing the mount from your beam path. These filter wheels are also available without ND filters and may be used to hold spectral filters or plate beam splitters.

Specifications & Tolerances

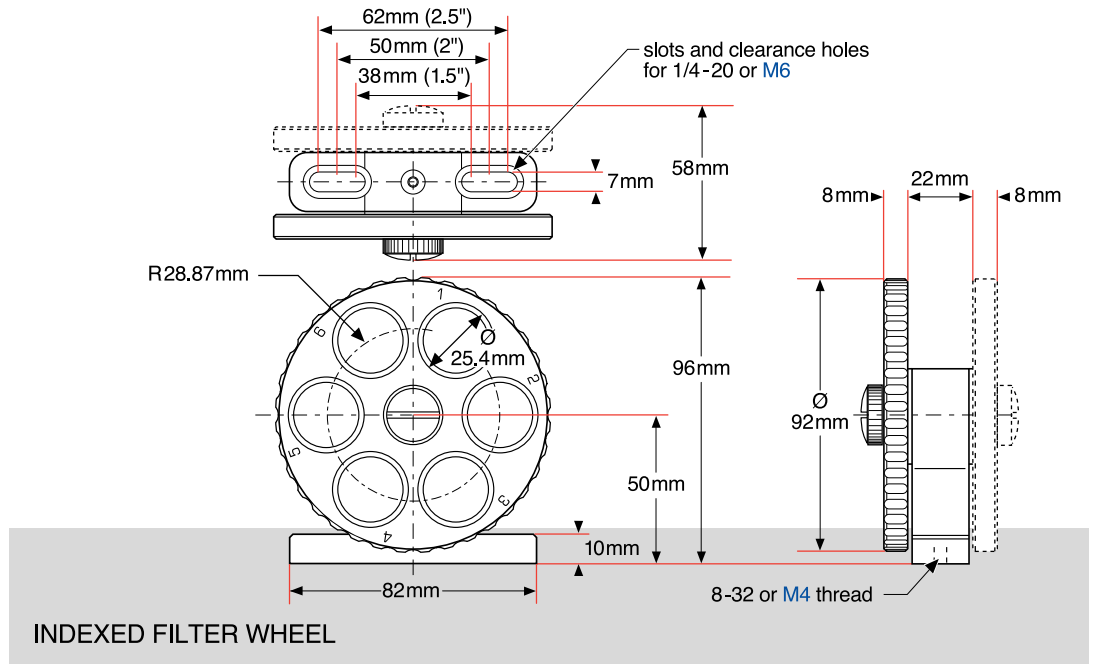
Dimensions: $\pm 0.2\text{mm}$
 Weight: Single: 1.0kg
 Double: 1.3kg
 Material: Aluminum
 Finish: Black anodized

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com

OPTICAL COMPONENTS

- Spherical Lenses
- Cylindrical Lenses
- Lens Kits
- Achromatic Doublets
- Multi-Element
- Micro Optics
- Mirrors
- Prisms
- Substrates & Windows
- Beamsplitters
- Polarizers
- Filter & Apertures**

Part No. 115-1211/1216/1221/1226



Filter Wheel Kits

ND Filter	Diameter (inches)	Diameter (mm)	Single Wheel	Double Wheel	PART NUMBER
Density = 0.10	9.84	25.0	1	1	078-0770
Density = 0.22	9.84	25.0	1	1	078-0760
Density = 0.30	9.84	25.0	1	1	078-0755
Density = 0.40	9.84	25.0	1	1	078-0750
Density = 0.52	9.84	25.0	1	2	078-0745
Density = 1.00	9.84	25.0		1	078-0735
Density = 1.50	9.84	25.0		1	078-0725
Density = 2.00	9.84	25.0		1	078-0720
Density = 2.50	9.84	25.0		1	078-0715

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com

Filter Wheels

Description	Filter Diameter (inches)	Filter Diameter (mm)	Density	Price	INCH	METRIC
					PART NUMBER	PART NUMBER
Double Wheel w/ND Filters	1.0	25.4	0.00 - 3.00	\$ 770.00	115-1220	115-1225
Single Wheel w/ND Filters	1.0	25.4	0.00 - 0.50	\$ 425.00	115-1210	115-1215
Double Wheel, empty	1.0	25.4	-	\$ 275.00	115-1221	115-1226
Single Wheel, empty	1.0	25.4	-	\$ 190.00	115-1211	115-1216



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



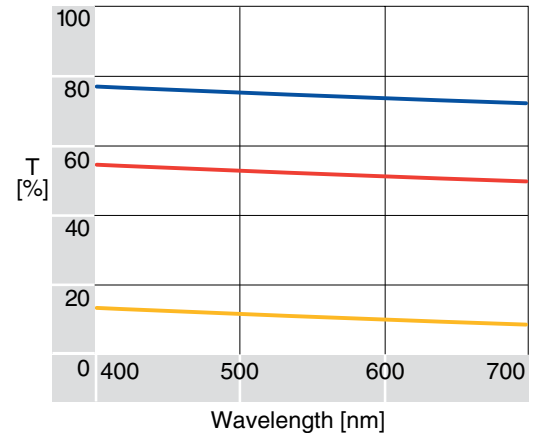
Specifications & Tolerances

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

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

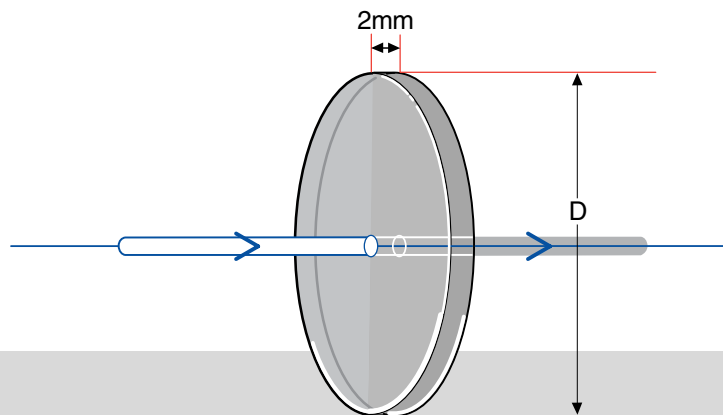
These metallic neutral density filters offer the best neutral density over a broad spectral range. A substantial portion of the incident radiation is rejected by reflection rather than absorption, thus reducing the problematic heating found in the absorptive type neutral density filters. These coatings 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

ORDERING
 &
 TECHNICAL SUPPORT
 (949) 851-5881
 FAX (949) 851-5058
 E-MAIL
 sales@optosigma.com
 WEB
 www.optosigma.com

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

Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

Filter & Apertures

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com

Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

Filter & Apertures

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

ORDERING
&
TECHNICAL SUPPORT

(949) 851-5881

FAX (949) 851-5058

E-MAIL

sales@optosigma.com

WEB

www.optosigma.com



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

Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

Filter & Apertures

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com



Spherical Lenses
 Cylindrical Lenses
 Lens Kits
 Achromatic Doublets
 Multi-Element
 Micro Optics
 Mirrors
 Prisms
 Substrates & Windows
 Beamsplitters
 Polarizers
 Filter & Apertures

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.

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com



Absorptive Neutral Density Filters, Mounted

- Two versions available for calibrated visible (425-675nm) and near-IR coverage
- Supplied in three popular diameters - 25mm, 30mm and 50mm
- Transmittances available from 0.01% to 90%
- Mounted version has a convenient metal ring
- Unmounted visible and YAG versions also available



These are absorbing glass type ND filters. Neutral density filters are very useful in a variety of applications where a precise and known beam attenuation is needed. Filters may be stacked (see introduction on page 193) for additive attenuation. These filters are mounted in metal rings which provide mounting convenience. The outside diameters of the mounting rings are 25mm, 30mm and 50mm. The clear apertures of the filters are 17mm, 25mm and 45mm respectively. As well as a standard line, a series is offered for use with low power YAG lasers. These are optimized to have the precisely stated densities at 1064nm. These YAG ND Filters are for low power applications only. We do not specify or guarantee a damage threshold.

Specifications & Tolerances

Mount diameter: 25, 30 or 52mm ± 0.1 mm

Parallelism: 3arcmin

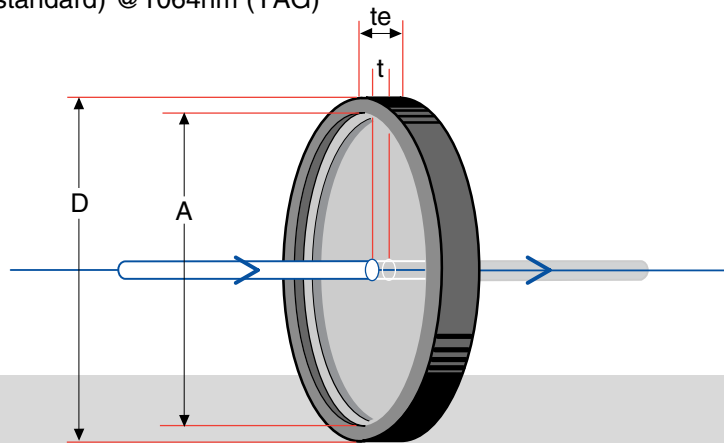
Surface quality: 60-40

Density: @550nm (standard) @1064nm (YAG)

Clear aperture: 17.0, 22.0 or 42.0mm

Mount thickness (te): 5.0 ± 0.2 mm

Filter thickness (t): See Unmounted Filters



ABSORPTIVE NEUTRAL DENSITY FILTER

Absorptive Neutral Density Filters, Mounted

Wavelength Range (nm)	Diameter, D (mm)	Aperture, A (mm)	Optical Density (OD)	Transmittance (%)	Price	PART NUMBER
400-700	25.0	17.0	3.00	0.1 \pm 0.07	\$ 47.00	077-0178
400-700	25.0	17.0	2.00	1 \pm 0.5	\$ 47.00	077-0180
400-700	25.0	17.0	1.30	5 \pm 1	\$ 47.00	077-0182
400-700	25.0	17.0	1.00	10 \pm 2	\$ 47.00	077-0184
400-700	25.0	17.0	0.89	12.5 \pm 2	\$ 47.00	077-0186
400-700	25.0	17.0	0.70	20 \pm 2	\$ 47.00	077-0188

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com



Absorptive Neutral Density Filters, Mounted

Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

Filter & Apertures

Wavelength Range (nm)	Diameter, D (mm)	Aperture, A (mm)	Optical Density (OD)	Transmittance (%)	Price	PART NUMBER
400-700	25.0	17.0	0.60	25 ± 2.5	\$ 47.00	077-0190
400-700	25.0	17.0	0.52	30 ± 3	\$ 47.00	077-0192
400-700	25.0	17.0	0.40	40 ± 4	\$ 47.00	077-0194
400-700	25.0	17.0	0.30	50 ± 5	\$ 47.00	077-0196
400-700	25.0	17.0	0.16	70 ± 5	\$ 47.00	077-0198
400-700	30.0	22.0	3.00	0.1 ± 0.07	\$ 58.00	077-0218
400-700	30.0	22.0	2.00	1 ± 0.5	\$ 58.00	077-0220
400-700	30.0	22.0	1.30	5 ± 1	\$ 58.00	077-0230
400-700	30.0	22.0	1.00	10 ± 2	\$ 58.00	077-0240
400-700	30.0	22.0	0.89	12.5 ± 2	\$ 58.00	077-0250
400-700	30.0	22.0	0.70	20 ± 2	\$ 58.00	077-0260
400-700	30.0	22.0	0.60	25 ± 2.5	\$ 58.00	077-0270
400-700	30.0	22.0	0.52	30 ± 3	\$ 58.00	077-0280
400-700	30.0	22.0	0.40	40 ± 4	\$ 58.00	077-0290
400-700	30.0	22.0	0.30	50 ± 5	\$ 58.00	077-0330
400-700	30.0	22.0	0.16	70 ± 5	\$ 58.00	077-0340
400-700	52.0	47.0	3.00	0.1 ± 0.07	\$ 116.00	077-0348
400-700	52.0	47.0	2.00	1 ± 0.5	\$ 116.00	077-0350
400-700	52.0	47.0	1.30	5 ± 1	\$ 116.00	077-0355
400-700	52.0	47.0	1.00	10 ± 2	\$ 116.00	077-0360
400-700	52.0	47.0	0.89	12.5 ± 2	\$ 116.00	077-0365
400-700	52.0	47.0	0.70	20 ± 2	\$ 116.00	077-0370
400-700	52.0	47.0	0.60	25 ± 2.5	\$ 116.00	077-0380
400-700	52.0	47.0	0.52	30 ± 3	\$ 116.00	077-0390
400-700	52.0	47.0	0.40	40 ± 4	\$ 116.00	077-0440
400-700	52.0	47.0	0.30	50 ± 5	\$ 116.00	077-0450
400-700	52.0	47.0	0.16	70 ± 5	\$ 116.00	077-0460
1064.0	25.0	17.0	1.30	5	\$ 58.00	077-1050
1064.0	25.0	17.0	1.00	10	\$ 58.00	077-1052
1064.0	25.0	17.0	0.82	15	\$ 58.00	077-1054
1064.0	25.0	17.0	0.70	20	\$ 58.00	077-1056
1064.0	25.0	17.0	0.60	25	\$ 58.00	077-1058
1064.0	25.0	17.0	0.52	30	\$ 58.00	077-1060
1064.0	25.0	17.0	0.30	50	\$ 58.00	077-1062
1064.0	30.0	22.0	1.30	5	\$ 68.00	077-1110
1064.0	30.0	22.0	1.00	10	\$ 68.00	077-1120
1064.0	30.0	22.0	0.82	15	\$ 68.00	077-1130
1064.0	30.0	22.0	0.70	20	\$ 68.00	077-1140
1064.0	30.0	22.0	0.60	25	\$ 68.00	077-1150
1064.0	30.0	22.0	0.52	30	\$ 68.00	077-1160
1064.0	30.0	22.0	0.30	50	\$ 68.00	077-1170
1064.0	52.0	47.0	1.30	5	\$ 126.00	077-1180
1064.0	52.0	47.0	1.00	10	\$ 126.00	077-1190
1064.0	52.0	47.0	0.82	15	\$ 126.00	077-1220
1064.0	52.0	47.0	0.70	20	\$ 126.00	077-1230
1064.0	52.0	47.0	0.60	25	\$ 126.00	077-1240
1064.0	52.0	47.0	0.52	30	\$ 126.00	077-1250
1064.0	52.0	47.0	0.30	50	\$ 126.00	077-1260

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058

E-MAIL
sales@optosigma.com

WEB
www.optosigma.com

Round and Square Neutral Density Filters, Unmounted

We offer here a range of round and square unmounted neutral density filters. These unmounted neutral density filters exhibit all of the useful attributes of our mounted filters, but will be found useful in special and built-in applications.



Specifications & Tolerances

Side: $\pm 0.2\text{mm}$ Thickness: $\pm 0.5\text{mm}$
 Parallelism: $\leq 3\text{arcmin}$ Surface quality: 60-40
 Density: Specified @550nm

Spherical Lenses
 Cylindrical Lenses
 Lens Kits
 Achromatic Doublets
 Multi-Element
 Micro Optics
 Mirrors
 Prisms
 Substrates & Windows
 Beamsplitters
 Polarizers

Filter & Apertures

Absorptive Neutral Density Filters, Unmounted Round

Wavelength Range (nm)	Diameter, D (mm)	Thickness (mm)	Optical Density (OD)	Transmittance (%)	Price	PART NUMBER
400-700	10.0	<5	3.00	0.1 \pm 0.07	\$ 24.00	077-1319
400-700	10.0	<5	2.00	1 \pm 0.5	\$ 24.00	077-1320
400-700	10.0	<5	1.30	5 \pm 1	\$ 22.00	077-1321
400-700	10.0	<5	1.00	10 \pm 2	\$ 22.00	077-1322
400-700	10.0	<5	0.89	12.5 \pm 2	\$ 22.00	077-1323
400-700	10.0	<5	0.70	20 \pm 2	\$ 22.00	077-1324
400-700	10.0	<5	0.60	25 \pm 2.5	\$ 22.00	077-1325
400-700	10.0	<5	0.52	30 \pm 3	\$ 22.00	077-1326
400-700	10.0	<5	0.40	40 \pm 4	\$ 22.00	077-1327
400-700	10.0	<5	0.30	50 \pm 5	\$ 22.00	077-1328
400-700	10.0	<5	0.16	70 \pm 5	\$ 22.00	077-1329
400-700	25.0	<5	3.00	0.1 \pm 0.07	\$ 37.00	077-1270
400-700	25.0	<5	2.00	1 \pm 0.5	\$ 37.00	077-1261
400-700	25.0	<5	1.30	5 \pm 1	\$ 37.00	077-1263
400-700	25.0	<5	1.00	10 \pm 2	\$ 32.00	077-1265
400-700	25.0	<5	0.89	12.5 \pm 2	\$ 32.00	077-1267
400-700	25.0	<5	0.70	20 \pm 2	\$ 32.00	077-1269
400-700	25.0	<5	0.60	25 \pm 2.5	\$ 32.00	077-1271
400-700	25.0	<5	0.52	30 \pm 3	\$ 32.00	077-1273
400-700	25.0	<5	0.40	40 \pm 4	\$ 32.00	077-1275
400-700	25.0	<5	0.30	50 \pm 5	\$ 32.00	077-1277
400-700	25.0	<5	0.16	70 \pm 5	\$ 32.00	077-1279
400-700	30.0	<5	3.00	0.1 \pm 0.07	\$ 42.00	077-1289
400-700	30.0	<5	2.00	1 \pm 0.5	\$ 42.00	077-1280
400-700	30.0	<5	1.30	5 \pm 1	\$ 42.00	077-1282
400-700	30.0	<5	1.00	10 \pm 2	\$ 34.00	077-1284
400-700	30.0	<5	0.89	12.5 \pm 2	\$ 34.00	077-1286
400-700	30.0	<5	0.70	20 \pm 2	\$ 34.00	077-1288
400-700	30.0	<5	0.60	25 \pm 2.5	\$ 34.00	077-1290
400-700	30.0	<5	0.52	30 \pm 3	\$ 34.00	077-1292
400-700	30.0	<5	0.40	40 \pm 4	\$ 34.00	077-1294
400-700	30.0	<5	0.30	50 \pm 5	\$ 34.00	077-1296
400-700	30.0	<5	0.16	70 \pm 5	\$ 34.00	077-1298
400-700	50.0	<5	3.00	0.1 \pm 0.07	\$ 53.00	077-1299
400-700	50.0	<5	2.00	1 \pm 0.5	\$ 53.00	077-1300
400-700	50.0	<5	1.30	5 \pm 1	\$ 46.00	077-1302
400-700	50.0	<5	1.00	10 \pm 2	\$ 46.00	077-1304
400-700	50.0	<5	0.89	12.5 \pm 2	\$ 46.00	077-1306
400-700	50.0	<5	0.70	20 \pm 2	\$ 46.00	077-1308
400-700	50.0	<5	0.60	25 \pm 2.5	\$ 46.00	077-1310
400-700	50.0	<5	0.52	30 \pm 3	\$ 46.00	077-1312

If you need a neutral density filter quickly, just let us know. With our next-day delivery option your system will be up and running that much sooner. And if you don't see exactly the neutral density filter that you need give us a call. We can provide a wide range of special densities, sizes, and shapes to your specification.

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com

Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

Filter & Apertures

Absorptive Neutral Density Filters, Unmounted Round (continued)

Wavelength Range (nm)	Diameter, D (mm)	Aperture, A (mm)	Optical Density (OD)	Transmittance (%)	Price	PART NUMBER
400-700	50.0	<5	0.40	40 ± 4	\$ 46.00	077-1314
400-700	50.0	<5	0.30	50 ± 5	\$ 46.00	077-1316
400-700	50.0	<5	0.16	70 ± 5	\$ 46.00	077-1318
1064.0	10.0	<5	1.30	5	\$ 40.00	077-6110
1064.0	10.0	<5	1.00	10	\$ 40.00	077-6111
1064.0	10.0	<5	0.82	15	\$ 40.00	077-6112
1064.0	10.0	<5	0.70	20	\$ 40.00	077-6113
1064.0	10.0	<5	0.60	25	\$ 40.00	077-6114
1064.0	10.0	<5	0.52	30	\$ 40.00	077-6115
1064.0	10.0	<5	0.30	50	\$ 40.00	077-6117
1064.0	25.0	<5	1.30	5	\$ 65.00	077-6410
1064.0	25.0	<5	1.00	10	\$ 65.00	077-6411
1064.0	25.0	<5	0.82	15	\$ 65.00	077-6412
1064.0	25.0	<5	0.70	20	\$ 65.00	077-6413
1064.0	25.0	<5	0.60	25	\$ 65.00	077-6414
1064.0	25.0	<5	0.52	30	\$ 65.00	077-6415
1064.0	25.0	<5	0.30	50	\$ 65.00	077-6417
1064.0	30.0	<5	1.30	5	\$ 95.00	077-6510
1064.0	30.0	<5	1.00	10	\$ 95.00	077-6511
1064.0	30.0	<5	0.82	15	\$ 95.00	077-6512
1064.0	30.0	<5	0.70	20	\$ 95.00	077-6513
1064.0	30.0	<5	0.60	25	\$ 95.00	077-6514
1064.0	30.0	<5	0.52	30	\$ 95.00	077-6515
1064.0	30.0	<5	0.30	50	\$ 95.00	077-6517
1064.0	50.0	<5	1.30	5	\$ 105.00	077-6710
1064.0	50.0	<5	1.00	10	\$ 105.00	077-6711
1064.0	50.0	<5	0.82	15	\$ 105.00	077-6712
1064.0	50.0	<5	0.70	20	\$ 105.00	077-6713
1064.0	50.0	<5	0.60	25	\$ 105.00	077-6714
1064.0	50.0	<5	0.52	30	\$ 105.00	077-6715
1064.0	50.0	<5	0.30	50	\$ 105.00	077-6717

Absorptive Neutral Density Filters, Unmounted Square

Wavelength Range (nm)	Size (mm)	Thickness (mm)	Optical Density (OD)	Transmittance (%)	Price	PART NUMBER
400-700	10.0	<5	3.00	0.1 ± 0.07	\$ 32.00	077-0115
400-700	10.0	<5	2.00	1 ± 0.5	\$ 32.00	077-0120
400-700	10.0	<5	1.30	5 ± 1	\$ 32.00	077-0121
400-700	10.0	<5	1.00	10 ± 2	\$ 32.00	077-0122
400-700	10.0	<5	0.89	12.5 ± 2	\$ 32.00	077-0123
400-700	10.0	<5	0.70	20 ± 2	\$ 32.00	077-0124
400-700	10.0	<5	0.60	25 ± 2.5	\$ 32.00	077-0125
400-700	10.0	<5	0.52	30 ± 3	\$ 32.00	077-0126
400-700	10.0	<5	0.40	40 ± 4	\$ 32.00	077-0127
400-700	10.0	<5	0.30	50 ± 5	\$ 32.00	077-0128
400-700	10.0	<5	0.16	70 ± 5	\$ 32.00	077-0129
400-700	25.0	<5	3.00	0.1 ± 0.07	\$ 39.00	077-0135
400-700	25.0	<5	2.00	1 ± 0.5	\$ 39.00	077-0140
400-700	25.0	<5	1.30	5 ± 1	\$ 39.00	077-0141
400-700	25.0	<5	1.00	10 ± 2	\$ 39.00	077-0142
400-700	25.0	<5	0.89	12.5 ± 2	\$ 39.00	077-0143
400-700	25.0	<5	0.70	20 ± 2	\$ 39.00	077-0144

ORDERING
&
TECHNICAL SUPPORT

(949) 851-5881

FAX (949) 851-5058

E-MAIL

sales@optosigma.com

WEB

www.optosigma.com



Absorptive Neutral Density Filters, Unmounted Square (continued)

Wavelength Range (nm)	Size (mm)	Thickness (mm)	Optical Density (OD)	Transmittance (%)	Price	PART NUMBER
400-700	25.0	≤5	0.60	25 ± 2.5	\$ 39.00	077-0145
400-700	25.0	≤5	0.52	30 ± 3	\$ 39.00	077-0146
400-700	25.0	≤5	0.40	40 ± 4	\$ 39.00	077-0147
400-700	25.0	≤5	0.30	50 ± 5	\$ 39.00	077-0148
400-700	25.0	≤5	0.16	70 ± 5	\$ 39.00	077-0149
400-700	50.0	≤5	3.00	0.1 ± 0.07	\$ 53.00	077-0005
400-700	50.0	≤5	2.00	1 ± 0.5	\$ 53.00	077-0010
400-700	50.0	≤5	1.30	5 ± 1	\$ 53.00	077-0020
400-700	50.0	≤5	1.00	10 ± 2	\$ 53.00	077-0030
400-700	50.0	≤5	0.89	12.5 ± 2	\$ 53.00	077-0040
400-700	50.0	≤5	0.70	20 ± 2	\$ 53.00	077-0050
400-700	50.0	≤5	0.60	25 ± 2.5	\$ 53.00	077-0060
400-700	50.0	≤5	0.52	30 ± 3	\$ 53.00	077-0070
400-700	50.0	≤5	0.40	40 ± 4	\$ 53.00	077-0080
400-700	50.0	≤5	0.30	50 ± 5	\$ 53.00	077-0090
400-700	50.0	≤5	0.16	70 ± 5	\$ 53.00	077-0110
1064.0	10.0	≤5	1.30	5	\$ 60.00	077-7110
1064.0	10.0	≤5	1.00	10	\$ 60.00	077-7111
1064.0	10.0	≤5	0.82	15	\$ 60.00	077-7112
1064.0	10.0	≤5	0.70	20	\$ 60.00	077-7113
1064.0	10.0	≤5	0.60	25	\$ 60.00	077-7114
1064.0	10.0	≤5	0.52	30	\$ 60.00	077-7115
1064.0	10.0	≤5	0.30	50	\$ 60.00	077-7117
1064.0	25.0	≤5	1.30	5	\$ 75.00	077-7410
1064.0	25.0	≤5	1.00	10	\$ 75.00	077-7411
1064.0	25.0	≤5	0.82	15	\$ 75.00	077-7412
1064.0	25.0	≤5	0.70	20	\$ 75.00	077-7413
1064.0	25.0	≤5	0.60	25	\$ 75.00	077-7414
1064.0	25.0	≤5	0.52	30	\$ 75.00	077-7415
1064.0	25.0	≤5	0.30	50	\$ 75.00	077-7417
1064.0	50.0	≤5	1.30	5	\$ 130.00	077-7710
1064.0	50.0	≤5	1.00	10	\$ 130.00	077-7711
1064.0	50.0	≤5	0.82	15	\$ 130.00	077-7712
1064.0	50.0	≤5	0.70	20	\$ 130.00	077-7713
1064.0	50.0	≤5	0.60	25	\$ 130.00	077-7714
1064.0	50.0	≤5	0.52	30	\$ 130.00	077-7715
1064.0	50.0	≤5	0.30	50	\$ 130.00	077-7717

Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

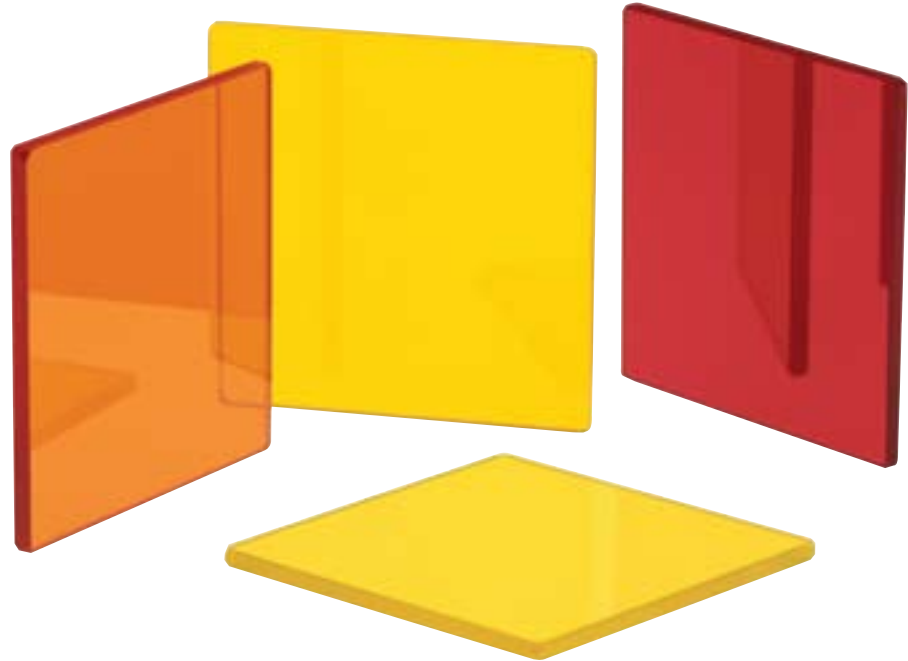
Filter & Apertures

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com



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.

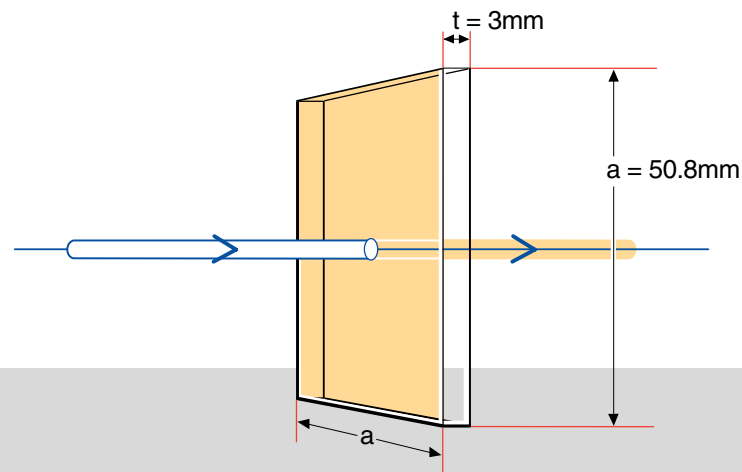
We offer a wide selection of colored glass filters. These are made from high quality optical colored glass. They are 2 inches square and unmounted.

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

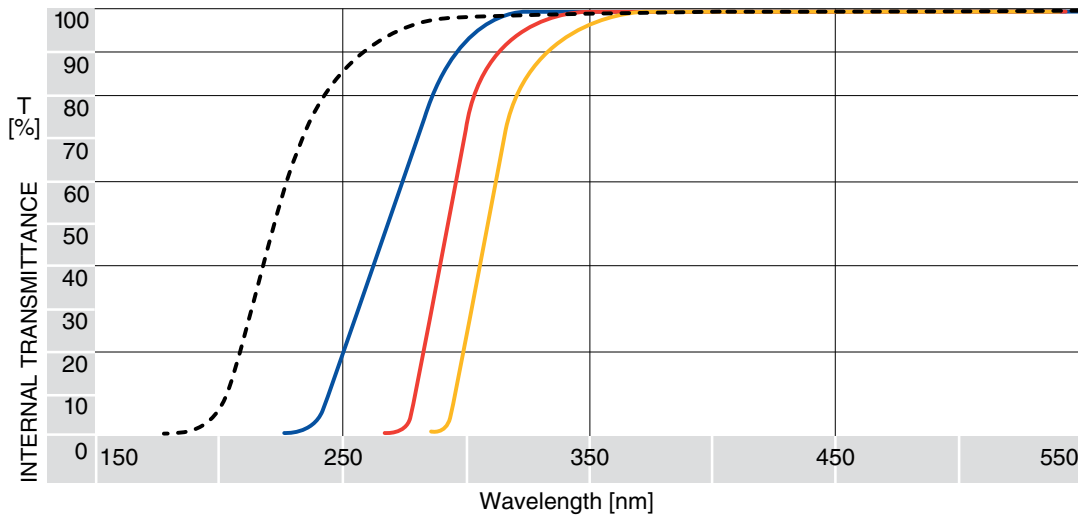


COLORED GLASS FILTER

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com

- Spherical Lenses
- Cylindrical Lenses
- Lens Kits
- Achromatic Doublets
- Multi-Element
- Micro Optics
- Mirrors
- Prisms
- Substrates & Windows
- Beamsplitters
- Polarizers

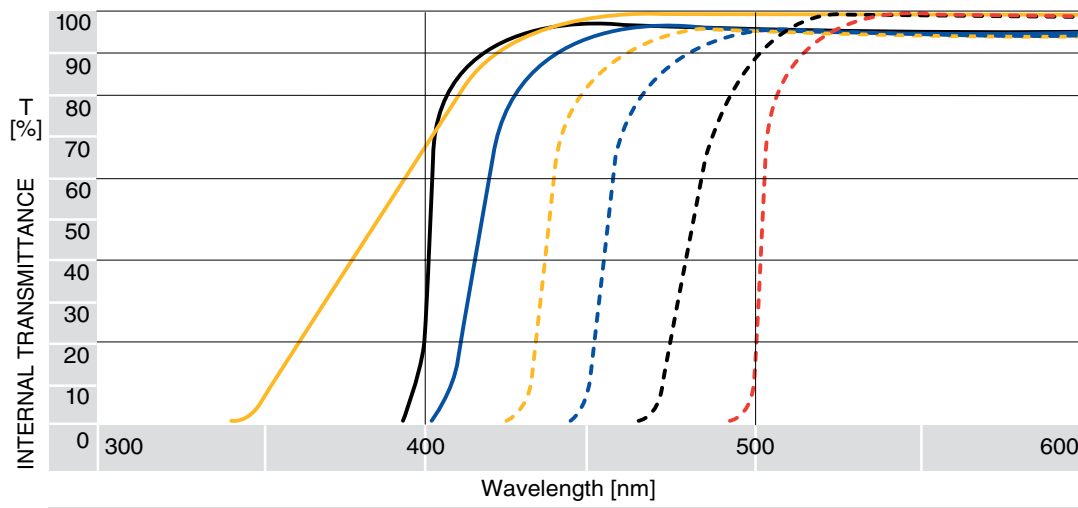
Filter & Apertures



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.

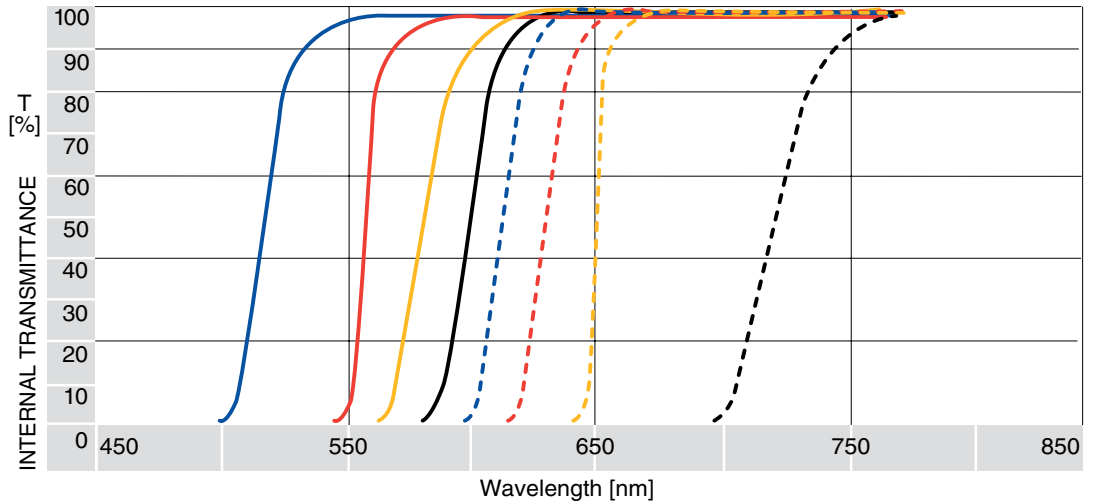
ORDERING & TECHNICAL SUPPORT
 (949) 851-5881
 FAX (949) 851-5058
 E-MAIL sales@optosigma.com
 WEB www.optosigma.com



OPTICAL COMPONENTS

- Spherical Lenses
- Cylindrical Lenses
- Lens Kits
- Achromatic Doublets
- Multi-Element
- Micro Optics
- Mirrors
- Prisms
- Substrates & Windows
- Beamsplitters
- Polarizers

Filter & Apertures

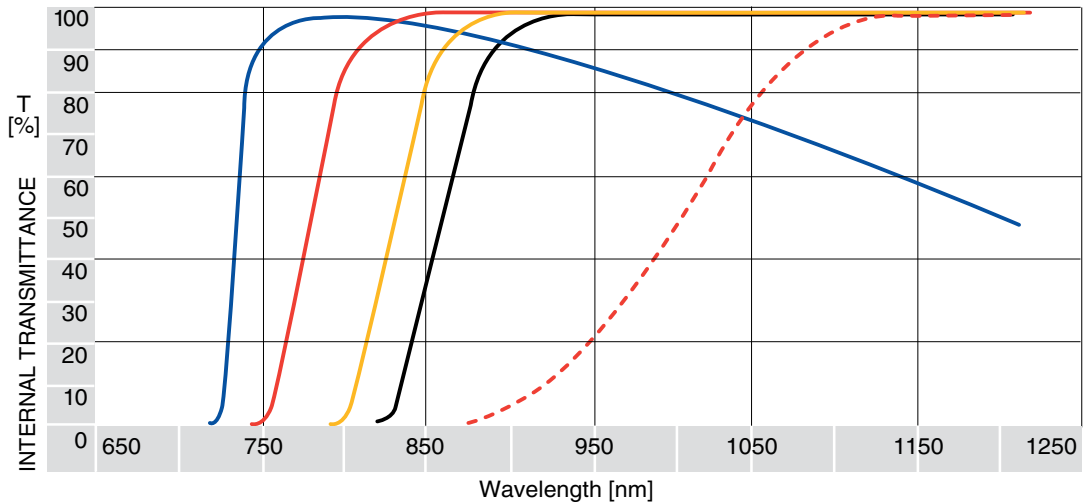


TYPICAL INTERNAL TRANSMITTANCE
ORANGE/RED FILTERS (3mm thick)

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	—		

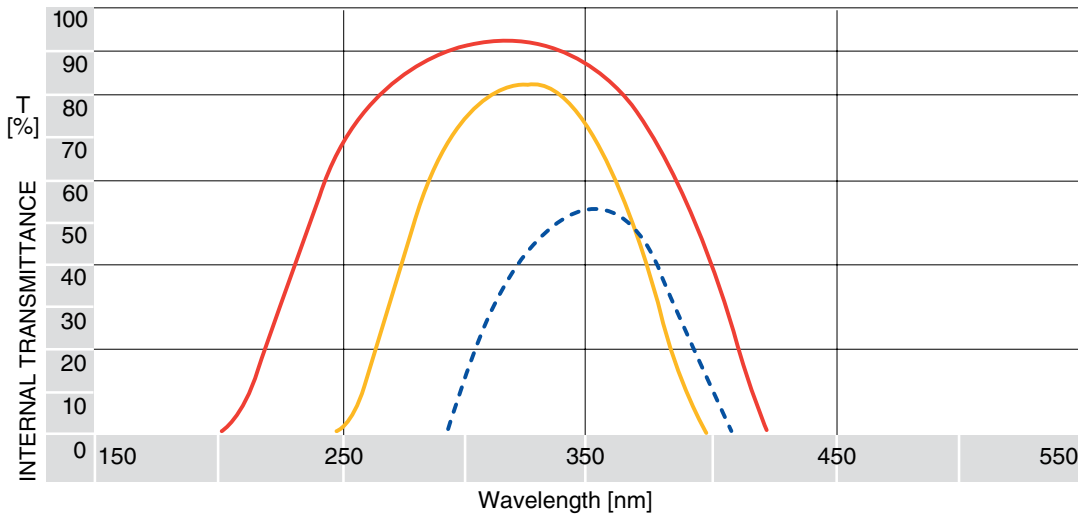
IR Transmitting Filters

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

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com



- Spherical Lenses
- Cylindrical Lenses
- Lens Kits
- Achromatic Doublets
- Multi-Element
- Micro Optics
- Mirrors
- Prisms
- Substrates & Windows
- Beamsplitters
- Polarizers



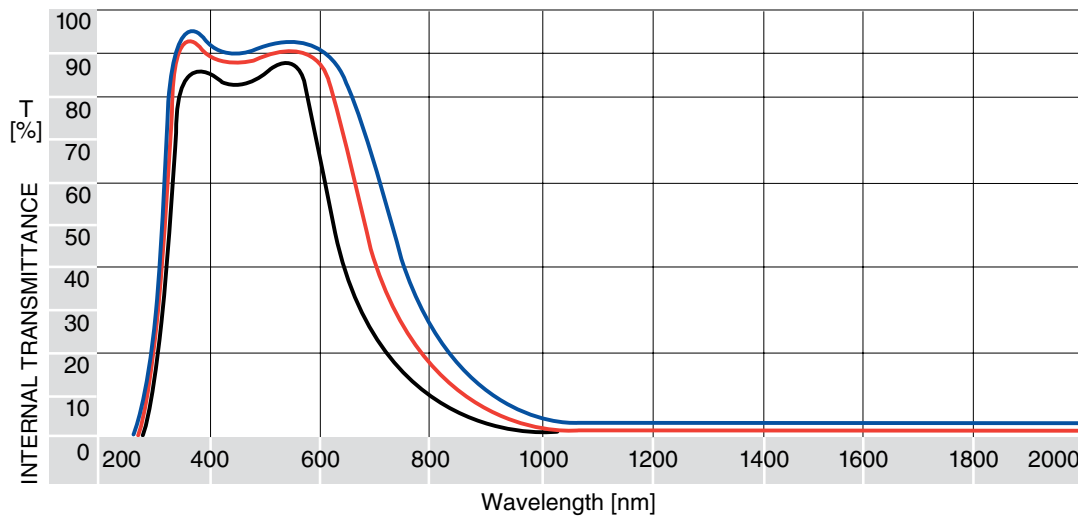
TYPICAL INTERNAL TRANSMITTANCE
ULTRA-VIOLET TRANSMITTING FILTERS
(3mm thick)

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

Ultra-Violet Transmitting Filters

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

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

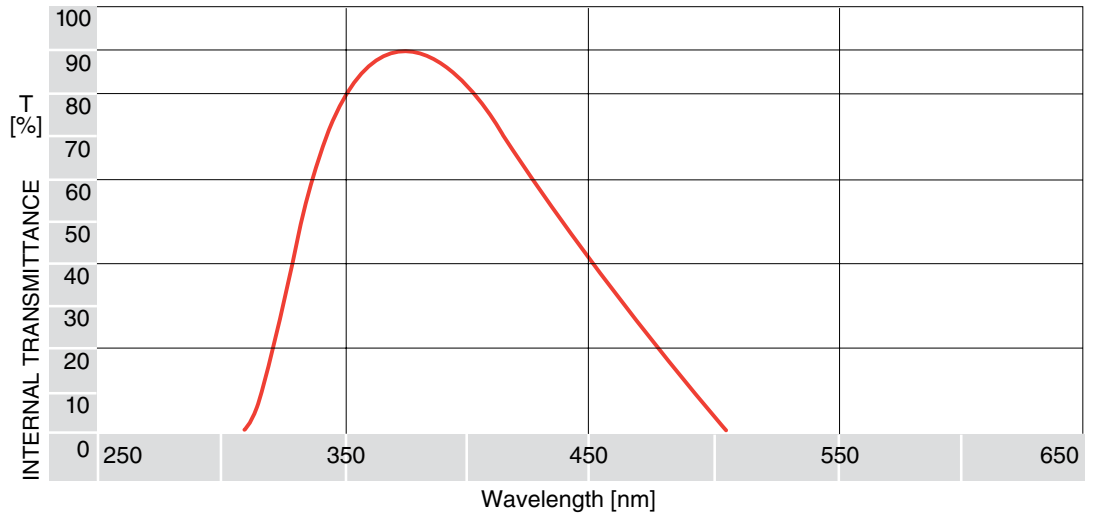
ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com



OPTICAL COMPONENTS

- Spherical Lenses
- Cylindrical Lenses
- Lens Kits
- Achromatic Doublets
- Multi-Element
- Micro Optics
- Mirrors
- Prisms
- Substrates & Windows
- Beamsplitters
- Polarizers

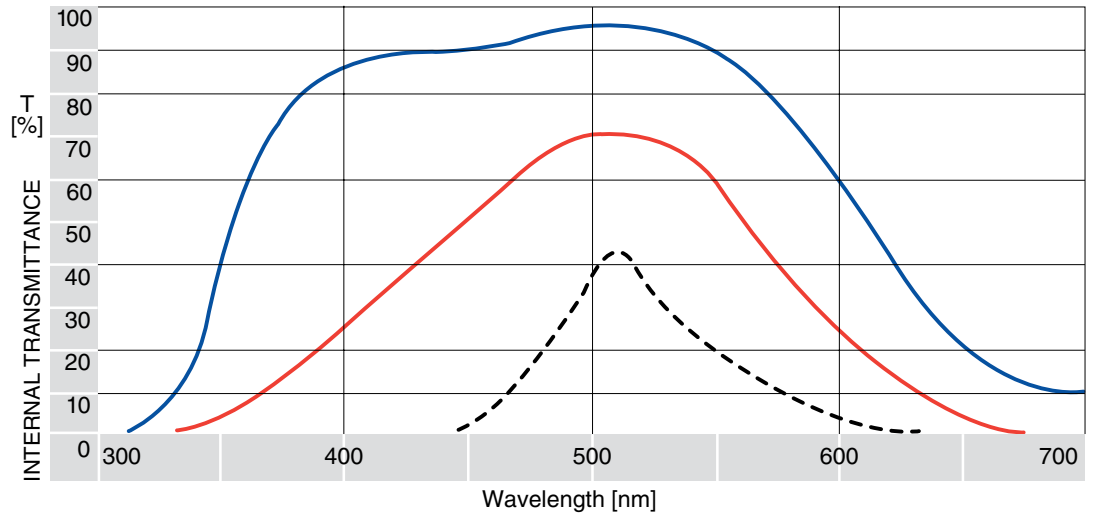
Filter & Apertures



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

ORDERING & TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL sales@optosigma.com
WEB www.optosigma.com



Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

Filter & Apertures

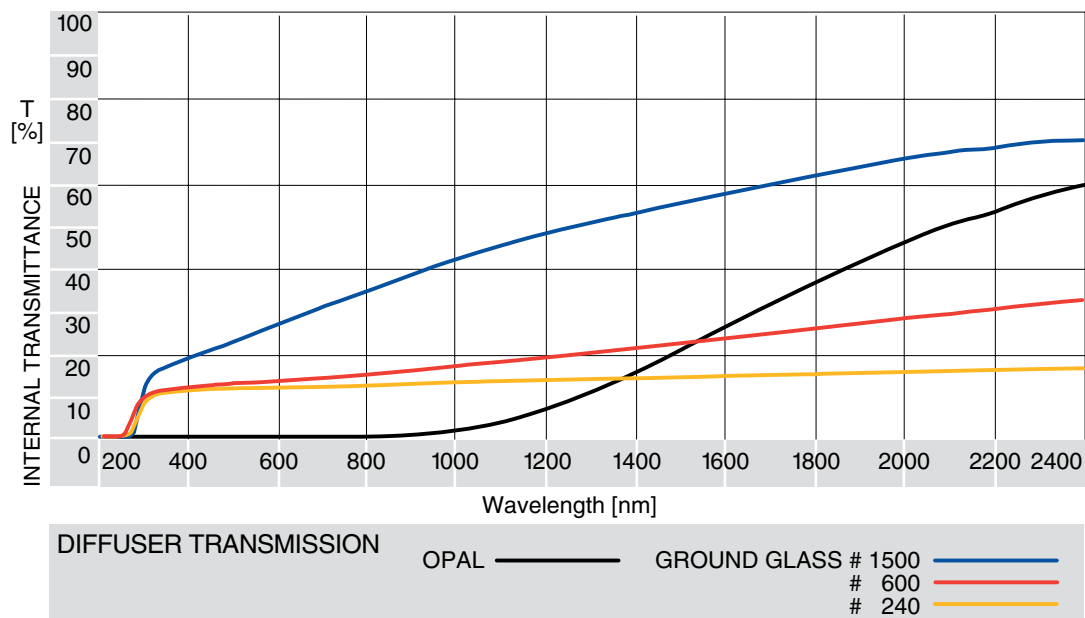
Diffusers

- Ground Glass available in three grades of diffusion for all applications
- Surfaces are ground from the polished state for high uniformity
- Opal glass diffusers provide nearly complete diffusion for demanding applications
- Available in two popular diameters: 30mm and 50mm



Two types of diffuser are offered: ground glass and opal glass.

Ground glass is acceptable for most applications. Six grades of grind are offered representing fine, medium, and coarse scattering surfaces. A finer grind provides a higher transmittance. Opal glass provides excellent diffusion at the expense of a very high loss factor. The rear surfaces of all our diffusers are polished.



Specifications & Tolerances

Diameter:
+0, -0.2mm
 Thickness: ±0.2mm
 Rear surface:
Flat to 4λ
 Parallelism: 5arcmin
 Transmission:
see graph

Diffusers

G L A S S

S I L I C A

Type	Diameter (mm)	Grade	Thickness (mm)	Price	PART NUMBER	Price	PART NUMBER
Ground glass	30	240	2.00	\$ 19.00	099-0110	\$ 42.00	099-0161
Ground glass	30	400	2.00	\$ 19.00	099-0115	\$ 42.00	099-0162
Ground glass	30	600	2.00	\$ 19.00	099-0120	\$ 42.00	099-0163
Ground glass	30	800	2.00	\$ 19.00	099-0123	\$ 42.00	099-0164
Ground glass	30	1000	2.00	\$ 19.00	099-0125	\$ 42.00	099-0165
Ground glass	30	1500	2.00	\$ 19.00	099-0130	\$ 42.00	099-0166
Ground glass	50	240	2.00	\$ 25.00	099-0140	\$ 58.00	099-0167
Ground glass	50	400	2.00	\$ 25.00	099-0145	\$ 58.00	099-0168
Ground glass	50	600	2.00	\$ 25.00	099-0150	\$ 58.00	099-0169
Ground glass	50	800	2.00	\$ 25.00	099-0153	\$ 58.00	099-0185
Ground glass	50	1000	2.00	\$ 25.00	099-0155	\$ 58.00	099-0186
Ground glass	50	1500	2.00	\$ 25.00	099-0160	\$ 58.00	099-0187
Opal glass	30	-	2.50	\$ 21.00	099-0170	-	-
Opal glass	50	-	2.50	\$ 27.00	099-0180	-	-

ORDERING
&
TECHNICAL SUPPORT
 (949) 851-5881
 FAX (949) 851-5058
 E-MAIL
sales@optosigma.com
 WEB
www.optosigma.com

 OptoSigma®

Apertures

- **Pinholes** provide a precision aperture for spatial filtering and beam profiling
- **Precision Air Slits** provide a completely open slit aperture
- **Iris Diaphragms** offer an easily adjustable method of limiting an aperture

In this section we list a number of slits, pinholes and iris diaphragms. All three are useful in providing a defined or reduced physical aperture to allow only a specific amount of light through a system. The slits and pinholes are small enough that they will act as quasi-diffraction sources or spatial filters for a number of applications.

The pinholes are precision etched in either stainless steel or copper foil. The copper foil version allows for higher power levels, as the copper is able to dissipate heat more effectively than the stainless steel versions.

Diaphragms are made from a series of interlocking leaves which open and close in such a way that a quasi-circular aperture is formed. Diaphragms are extremely useful in empirically determining the need for aperture stops to reduce scatter and stray light. Some of our iris diaphragms use a two-iris system to allow them to be closed completely to a zero aperture.



Pinholes

- **Pinholes** are precision etched for exact sizing and clean edges
- **Standard Pinholes** are provided in a non-magnetic stainless steel substrate
- **High Power Pinholes** use copper foil for heat dissipation



We offer two types of pinhole, one for standard applications and one for high power use. The standard version uses stainless steel whereas the high power version uses copper foil. Since they are completely drilled through holes in the substrate they may be used at any wavelength. Because these pinholes are precision etched they are exceptionally round and free of any edge defects. The kerf generated by other drilling techniques is completely eliminated and the resulting holes are consistently round and precise in diameter.

Mounted Pinholes

The following pinholes are exactly as above but mounted in metal discs of 16mm diameter and marked with the pinhole diameter. They fit directly into the pinhole mounts on page 268 and the spatial filter on page 269. Mounting gives these pinholes extra strength and protection enabling them to be stored and handled more easily.



Specifications & Tolerances

Diameter: 9.5mm

Pinhole diameter: $\pm 20\%$ (<5 microns)
 $\pm 10\%$ (>5 microns)

Laser damage threshold: standard 1KW/mm², 50nsec pulse
 high power 1MW/mm², 50nsec pulse

Thickness: 12.5 microns
 Concentration: $\pm 0.1\text{mm}$
 Material: Non-magnetic stainless steel or copper (high power)

ORDERING
 &
 TECHNICAL SUPPORT
 (949) 851-5881
 FAX (949) 851-5058
 E-MAIL
 sales@optosigma.com
 WEB
 www.optosigma.com

Pinholes

Type	Pinhole Diameter (μm)	Unmounted		Mounted	
		Price	PART NUMBER	Price	PART NUMBER
Standard	1.0	\$ 45.00	088-2230	\$ 55.00	088-2710
Standard	2.0	\$ 40.00	088-2240	\$ 50.00	088-2720
Standard	5.0	\$ 35.00	088-2260	\$ 45.00	088-2730
Standard	10.0	\$ 35.00	088-2280	\$ 45.00	088-2740
Standard	25.0	\$ 30.00	088-2340	\$ 40.00	088-2750
Standard	50.0	\$ 30.00	088-2380	\$ 40.00	088-2760
Standard	100.0	\$ 30.00	088-2440	\$ 40.00	088-2770
High Power	5.0	\$ 80.00	088-2660	\$ 90.00	088-2830
High Power	10.0	\$ 80.00	088-2670	\$ 90.00	088-2840
High Power	25.0	\$ 80.00	088-2680	\$ 90.00	088-2850
High Power	50.0	\$ 80.00	088-2690	\$ 90.00	088-2860

Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

Filter & Apertures

Precision Air Slits

The precision air slits are formed by etching a thin foil of stainless steel. They are extremely light and compact being highly suitable for OEM applications. If required these slits can be supplied with a black coating on the reverse and mounted on a one inch diameter blackened disc for protection and ease of handling.

Specifications & Tolerances

Diameter: 9.5mm

Slit length: 3mm

Slit width: ±10% (5 micron slit is ±20%)

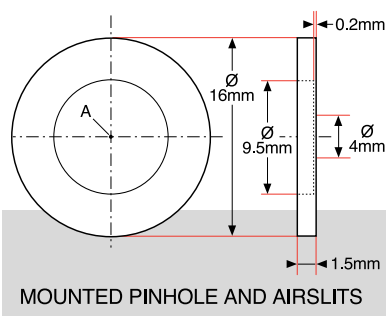
Thickness: 12.5 microns

Centration: ±0.1mm

Material: Non-magnetic stainless steel

Precision Air Slits

Slit Width (μm)	Unmounted		Mounted	
	Price	PART NUMBER	Price	PART NUMBER
5.0	\$ 60.00	088-1120	\$ 70.00	088-1121
10.0	\$ 60.00	088-1130	\$ 70.00	088-1131
25.0	\$ 55.00	088-1140	\$ 65.00	088-1141
50.0	\$ 50.00	088-1150	\$ 60.00	088-1151
100.0	\$ 50.00	088-1160	\$ 60.00	088-1161



For pinholes and slits **mounted** on 25mm diameter blackened disc **append -M** and add \$25 to the price.

Pinholes and Precision Air Slits fit directly into the mounts on page 303 and the spatial filter on page 304. Mounting gives extra strength and protection enabling them to be stored and handled more easily.

The best advice we can offer about cleaning pinholes and slits is to work scrupulously to avoid getting them dirty. Having said this, dirt will sometimes accumulate in these tiny apertures and needs to be cleaned out. We suggest first trying to clean them with a gentle stream of a dry clean neutral gas. If this fails to dislodge the particle, we would then suggest immersion in alcohol or the use of an ultrasonic bath. Acetone should be avoided as it will dissolve the cement used in the mounted versions of these devices.

If you need one of our slits or pinholes as soon as possible - just ask for next-day delivery. We try very hard to keep all of our precision apertures in stock for immediate shipment. So you won't find yourself caught trying to finish a project without the correct product.

ORDERING
&
TECHNICAL SUPPORT
(949) 851-5881
FAX (949) 851-5058
E-MAIL
sales@optosigma.com
WEB
www.optosigma.com

 **OptoSigma®**

- Spherical Lenses
- Cylindrical Lenses
- Lens Kits
- Achromatic Doublets
- Multi-Element
- Micro Optics
- Mirrors
- Prisms
- Substrates & Windows
- Beamsplitters
- Polarizers
- Filter & Apertures

Iris Diaphragms

- Actuating lever allows diaphragms to be easily and precisely adjusted
- Double blade versions allow the diaphragm to be completely closed
- Leaves are made from blackened, tempered steel
- Outer casing designed for push fit mounting

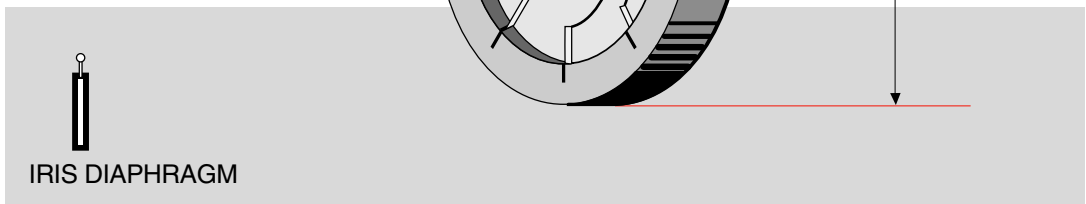
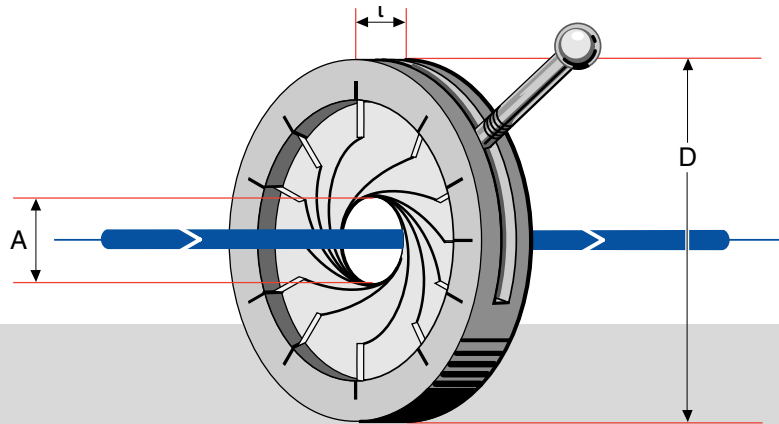


These iris diaphragms are made from tempered steel leaves mounted in a metal ring. They are fitted with an actuating lever. Each iris has a smooth and continuous operating range. If it is required that the iris can be closed down to zero aperture then it is important to use the dual blade type. These irises have a plain outer casing which is normally mounted in a housing with a slight push fit.

Specifications & Tolerances

Dimensions: $\pm 0.25\text{mm}$ Ring mount: Steel or brass
 Leaf material: Blackened tempered steel Finish: Black enamel

Call us with your special iris requirements. We have many other sizes available.



Iris Diaphragms

Blade No., Type	Diameter, D (mm)	Thickness, t (mm)	Lever Length (mm)	Aperture, A (mm)		Price	PART NUMBER
				Min	Max		
9, Single	16.0	6.5	10	1.0	8.0	\$ 55.00	089-0110
12, Single	22.0	6.8	10	1.0	14.0	\$ 55.00	089-0120
12, Single	26.0	6.8	10	1.0	16.0	\$ 55.00	089-0130
12, Single	35.0	7.0	10	1.0	24.0	\$ 55.00	089-0150
12, Single	40.0	7.4	10	1.0	25.0	\$ 55.00	089-0170
12, Single	49.0	7.9	17	1.5	33.0	\$ 60.00	089-0180
12, Single	60.0	9.5	17	1.5	40.0	\$ 80.00	089-0220
12, Single	76.0	9.6	17	2.0	56.0	\$ 105.00	089-0240
24, Single	155.0	25.4	35	5.0	100.0	\$ 145.00	089-0250
8, Dual	76.0	13.0	85	0.0	44.0	\$ 125.00	089-1110
9, Dual	102.0	16.0	95	0.0	63.0	\$ 165.00	089-1120
9, Dual	119.0	16.0	95	0.0	75.0	\$ 185.00	089-1130
18, Dual	155.0	20.8	95	0.0	100.0	\$ 195.00	089-1140

ORDERING & TECHNICAL SUPPORT
 (949) 851-5881
 FAX (949) 851-5058
 E-MAIL sales@optosigma.com
 WEB www.optosigma.com

