

Spherical Lenses

Cylindrical Lenses

Lens Kits

Achromatic Doublets

Multi-Element

Micro Optics

Mirrors

Prisms

Substrates & Windows

Beamsplitters

Polarizers

Filter & Apertures

Laser Mirrors

- High reflectance at laser lines in the Ultra-Violet, visible, and NIR
- Polished to $\lambda/10$ minimizing subsurface structure
- ≤ 3 arcmin parallelism
- Multilayer dielectric coatings, optimized for design wavelength
- Designed for 45 degree angle of incidence
- Standard diameters from 12.7 to 50.8mm

These laser mirrors are designed for specific wavelength laser applications where low wavefront distortion, low scattering, and high reflectivity are usually important. The reflectance is greater than 99.5% at the specified wavelength. Typically the s-polarization is greater than 99.9% and p-polarization is close to 99.5%. The reflectance curves shown on pages 112-114 are for a circularly polarized input beam.

Possible surface damage from higher power laser beams is minimized by careful polishing and precisely controlled coating methods.

As with the broadband mirrors, standard diameters are 1/2 inch, 3/4 inch, 1 inch and 2 inches. Other diameters are available on request. Other laser wavelengths can also be provided so please call.



Specifications & Tolerances

Surface flatness: $\lambda/10$

Surface quality: 20-10

Thickness: ± 0.1 mm

Bevel: 0.3mmx45° typical

Laser damage threshold: Single Wavelength: $5\text{J}/\text{cm}^2$ @ 10ns pulse, 1064nm

Diameter: +0, -0.1mm

Parallelism: ≤ 3 arcmin

Clear aperture: $>90\%$ diameter

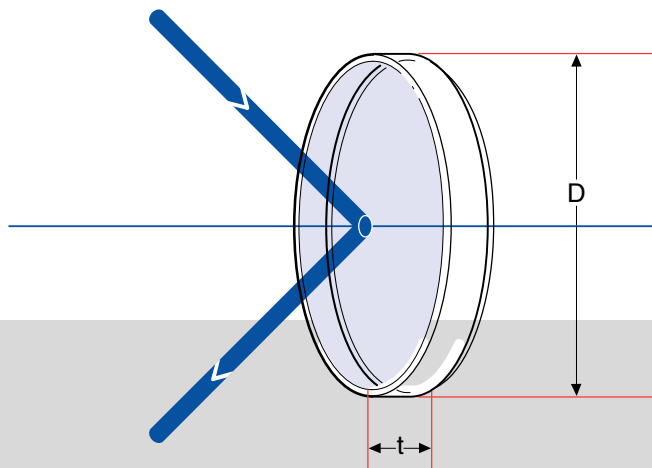
Material: BK7, grade A

Durability: to MIL-C-675

Reflectance: $R > 99.5\%$ at laser wavelength for $\lambda > 300\text{nm}$

$R > 99.0\%$ at laser wavelength for $200\text{nm} < \lambda < 300\text{nm}$

$R > 95.0\%$ at laser wavelength for $\lambda < 200\text{nm}$

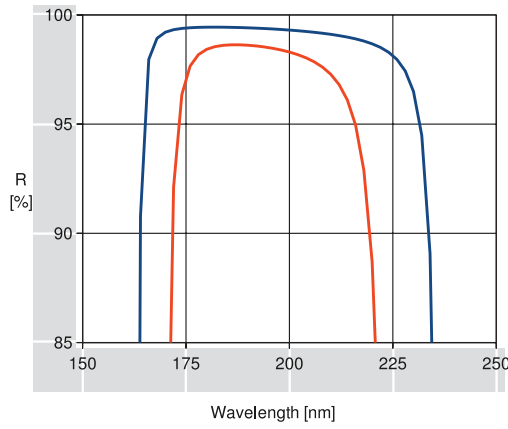


PLANE MIRROR

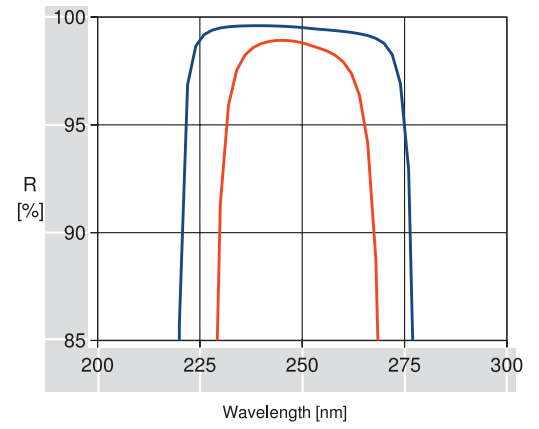
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OPTICAL COMPONENTS

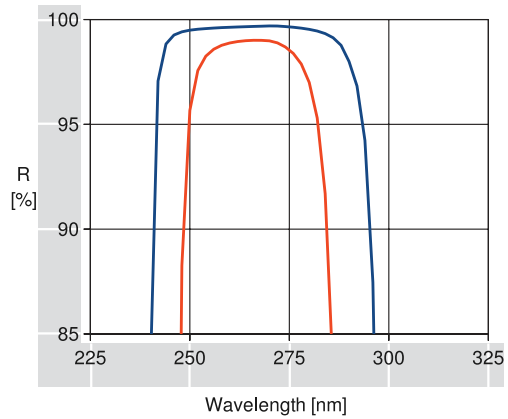
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- Filter & Apertures



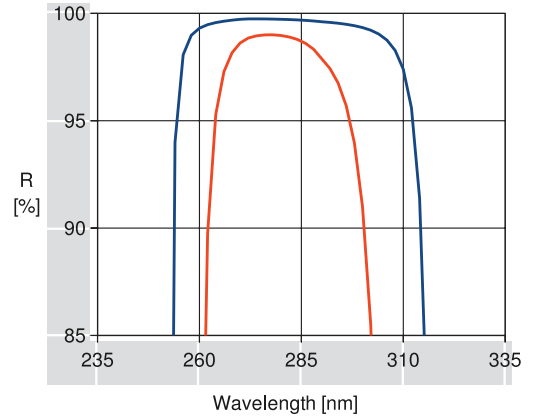
NARROWBAND H.R. COATING
R03: 193nm
 S-POL, 45° ————
 P-POL, 45° ————



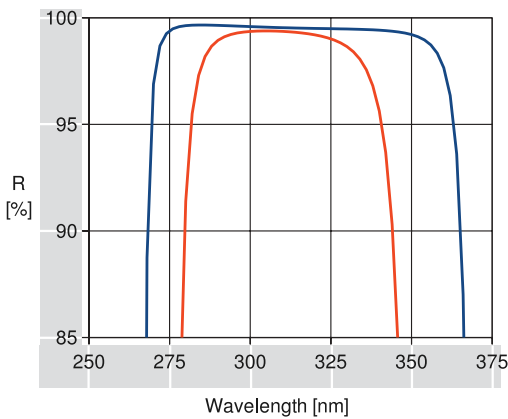
NARROWBAND H.R. COATING
R04: 248nm
 S-POL, 45° ————
 P-POL, 45° ————



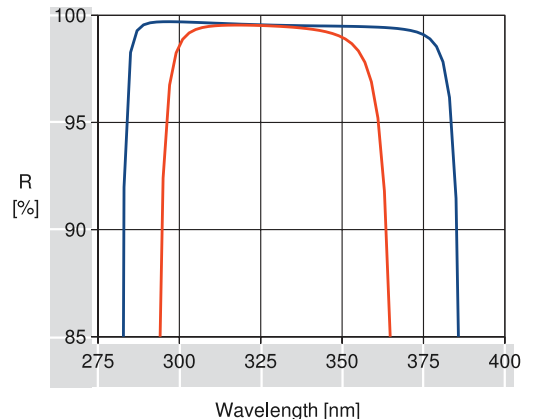
NARROWBAND H.R. COATING
R05: 266nm
 S-POL, 45° ————
 P-POL, 45° ————



NARROWBAND H.R. COATING
R06: 281nm
 S-POL, 45° ————
 P-POL, 45° ————



NARROWBAND H.R. COATING
R07: 308nm
 S-POL, 45° ————
 P-POL, 45° ————



NARROWBAND H.R. COATING
R08: 325nm
 S-POL, 45° ————
 P-POL, 45° ————

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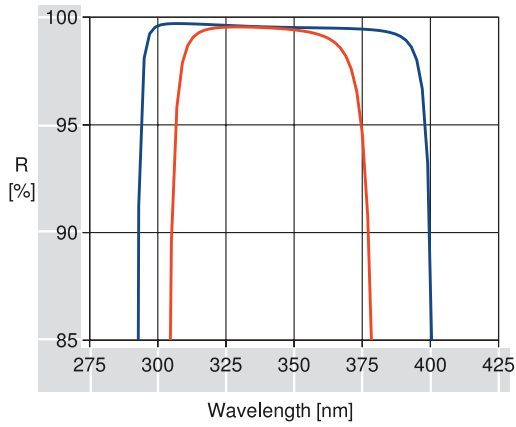
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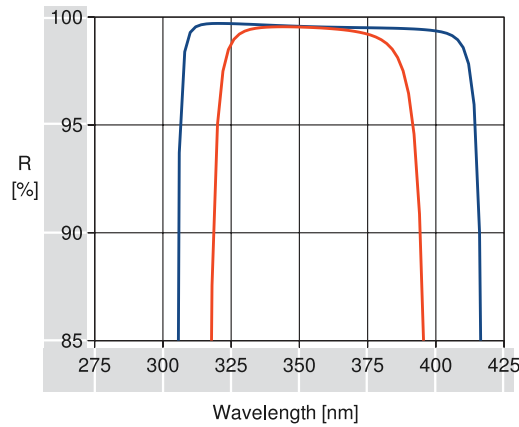
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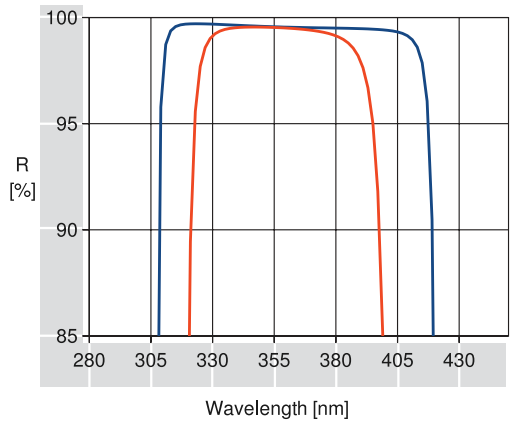
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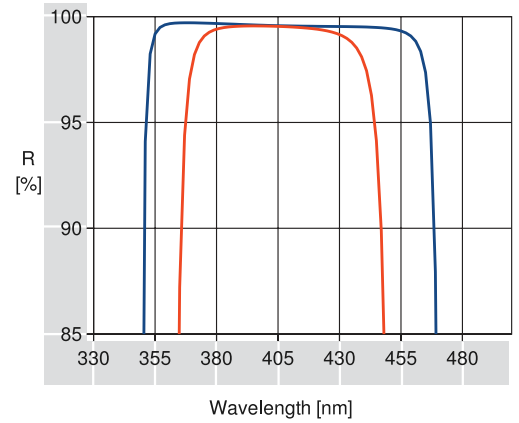
NARROWBAND H.R. COATING
R11: 337nm
 S-POL, 45° ————
 P-POL, 45° ————



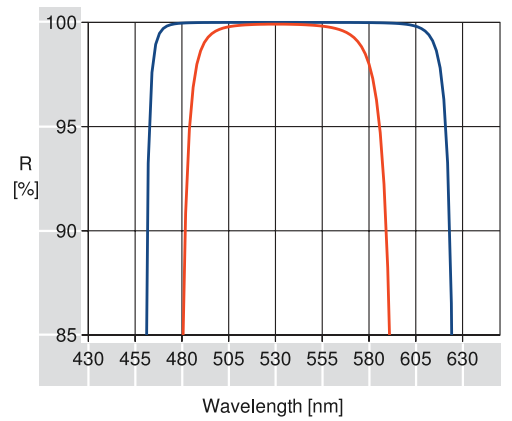
NARROWBAND H.R. COATING
R13: 352nm
 S-POL, 45° ————
 P-POL, 45° ————



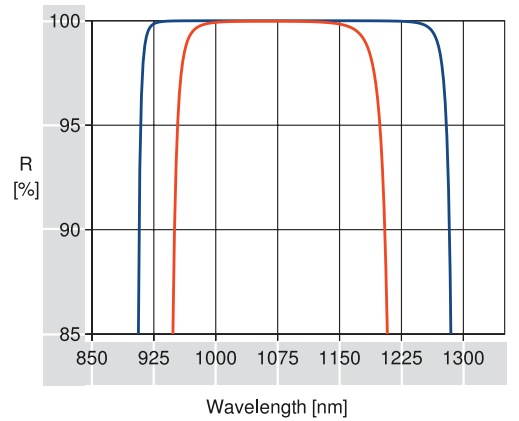
NARROWBAND H.R. COATING
R14: 355nm
 S-POL, 45° ————
 P-POL, 45° ————



NARROWBAND H.R. COATING
R16: 405nm
 S-POL, 45° ————
 P-POL, 45° ————



NARROWBAND H.R. COATING
R26: 532nm
 S-POL, 45° ————
 P-POL, 45° ————



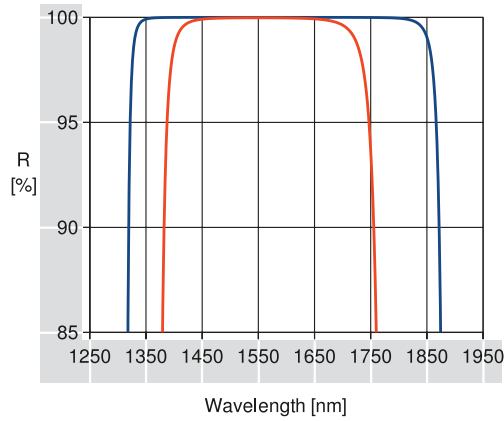
NARROWBAND H.R. COATING
R46: 1064nm
 S-POL, 45° ————
 P-POL, 45° ————

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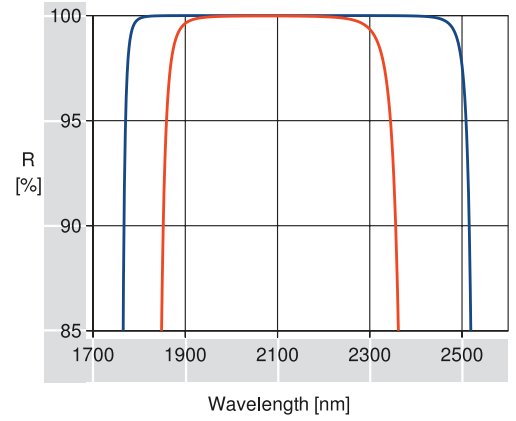


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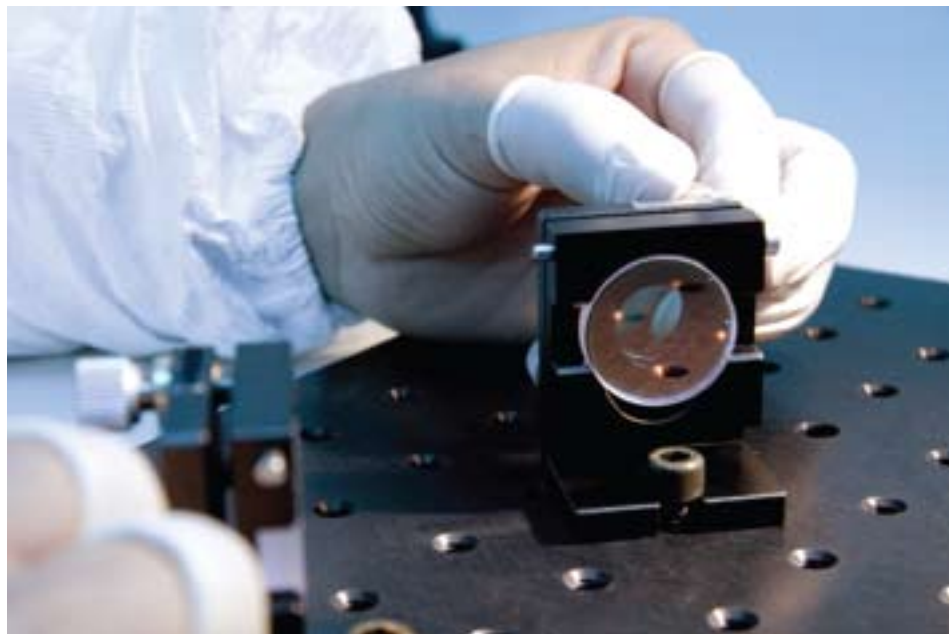
Laser Mirrors



NARROWBAND H.R. COATING
R48: 1550nm
 S-POL, 45° ————
 P-POL, 45° ————



NARROWBAND H.R. COATING
R50: 2060-2100nm
 S-POL, 45° ————
 P-POL, 45° ————



We offer a complete line of mirror mounts which fit a variety of applications. Please turn to the mirror mount section and make your selection or call our technical sales team to assist you.

Keeping your optics clean will both improve optical performance and increase the optic's lifetime. Please turn to page 33 for our complete selection of cleaning supplies.

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Laser Line Mirrors

Lasers	Wavelength Range (nm)	Diameter, D (mm)	Thickness, t (mm)	Reflectance (%)	Price	PART NUMBER
ArF	193	25.4	5.0	≥95.0	\$ 221.00	034-0110
ArF	193	30.0	5.0	≥95.0	\$ 275.00	034-0120
ArF	193	50.0	8.0	≥95.0	\$ 310.00	034-0130
KrF	248.4	12.7	5.0	≥99.0	\$ 105.00	034-0150
KrF	248.4	19.1	5.0	≥99.0	\$ 121.00	034-0155
KrF	248.4	25.4	5.0	≥99.0	\$ 131.00	034-0160
KrF	248.4	30.0	5.0	≥99.0	\$ 173.00	034-0170
KrF	248.4	50.0	8.0	≥99.0	\$ 236.00	034-0180
KrF	248.4	50.8	8.0	≥99.0	\$ 236.00	034-0185
Nd:YAG 4th	266	12.7	5.0	≥99.0	\$ 105.00	034-0190
Nd:YAG 4th	266	19.1	5.0	≥99.0	\$ 121.00	034-0195
Nd:YAG 4th	266	25.4	5.0	≥99.0	\$ 131.00	034-0200
Nd:YAG 4th	266	30.0	5.0	≥99.0	\$ 173.00	034-0203
Nd:YAG 4th	266	50.0	5.0	≥99.0	\$ 236.00	034-0205
Nd:YAG 4th	266	50.8	8.0	≥99.0	\$ 236.00	034-0210
XeBr	281.8	12.7	5.0	≥99.0	\$ 105.00	034-0220
XeBr	281.8	19.1	5.0	≥99.0	\$ 121.00	034-0225
XeBr	281.8	25.4	5.0	≥99.0	\$ 131.00	034-0230
XeBr	281.8	30.0	5.0	≥99.0	\$ 173.00	034-0240
XeBr	281.8	50.0	8.0	≥99.0	\$ 236.00	034-0250
XeBr	281.8	50.8	8.0	≥99.0	\$ 236.00	034-0260
XeCl	308	12.7	5.0	≥99.5	\$ 105.00	034-0261
XeCl	308	19.1	5.0	≥99.5	\$ 121.00	034-0262
XeCl	308	25.4	5.0	≥99.5	\$ 131.00	034-0264
XeCl	308	30.0	5.0	≥99.5	\$ 173.00	034-0265
XeCl	308	50.0	8.0	≥99.5	\$ 236.00	034-0266
XeCl	308	50.8	8.0	≥99.5	\$ 236.00	034-0267
HeCd	325	12.7	5.0	≥99.5	\$ 100.00	034-0270
HeCd	325	19.1	5.0	≥99.5	\$ 116.00	034-0275
HeCd	325	25.4	5.0	≥99.5	\$ 121.00	034-0280
HeCd	325	30.0	5.0	≥99.5	\$ 152.00	034-0290
HeCd	325	50.0	8.0	≥99.5	\$ 205.00	034-0330
HeCd	325	50.8	8.0	≥99.5	\$ 205.00	034-0340
N2	337.1	12.7	5.0	≥99.5	\$ 100.00	034-0341
N2	337.1	19.1	5.0	≥99.5	\$ 116.00	034-0342
N2	337.1	25.4	5.0	≥99.5	\$ 121.00	034-0344
N2	337.1	30.0	5.0	≥99.5	\$ 152.00	034-0345
N2	337.1	50.0	8.0	≥99.5	\$ 205.00	034-0346
N2	337.1	50.8	8.0	≥99.5	\$ 205.00	034-0347
XeF	352	12.7	5.0	≥99.5	\$ 100.00	034-0350
XeF	352	19.1	5.0	≥99.5	\$ 116.00	034-0355
XeF	352	25.4	5.0	≥99.5	\$ 121.00	034-0360
XeF	352	30.0	5.0	≥99.5	\$ 152.00	034-0370
XeF	352	50.0	8.0	≥99.5	\$ 205.00	034-0380
XeF	352	50.8	8.0	≥99.5	\$ 205.00	034-0390
Nd:YAG 3rd	355	12.7	5.0	≥99.5	\$ 100.00	034-0391
Nd:YAG 3rd	355	19.1	5.0	≥99.5	\$ 116.00	034-0392
Nd:YAG 3rd	355	25.4	5.0	≥99.5	\$ 121.00	034-0394
Nd:YAG 3rd	355	30.0	5.0	≥99.5	\$ 152.00	034-0395
Nd:YAG 3rd	355	50.0	8.0	≥99.5	\$ 205.00	034-0396
Nd:YAG 3rd	355	50.8	8.0	≥99.5	\$ 205.00	034-0397

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Laser Line Mirrors (continued)

Lasers	Wavelength Range (nm)	Diameter, D (mm)	Thickness, t (mm)	Reflectance (%)	Price	PART NUMBER
LD	405	12.7	5.0	≥99.5	\$ 100.00	034-0400
LD	405	19.1	5.0	≥99.5	\$ 116.00	034-0405
LD	405	25.4	5.0	≥99.5	\$ 121.00	034-0410
LD	405	30.0	5.0	≥99.5	\$ 152.00	034-0415
LD	405	50.0	8.0	≥99.5	\$ 205.00	034-0420
LD	405	50.8	8.0	≥99.5	\$ 205.00	034-0425
Nd:YAG 2nd	532	12.7	5.0	≥99.5	\$ 105.00	034-0590
Nd:YAG 2nd	532	19.1	5.0	≥99.5	\$ 121.00	034-0595
Nd:YAG 2nd	532	25.0	5.0	≥99.5	\$ 131.00	034-0620
Nd:YAG 2nd	532	25.4	5.0	≥99.5	\$ 131.00	034-0660
Nd:YAG 2nd	532	30.0	5.0	≥99.5	\$ 173.00	034-0670
Nd:YAG 2nd	532	50.0	8.0	≥99.5	\$ 236.00	034-0680
Nd:YAG 2nd	532	50.8	8.0	≥99.5	\$ 236.00	034-0690
Nd:YAG	1064	12.7	5.0	≥99.5	\$ 152.00	034-1220
Nd:YAG	1064	19.1	5.0	≥99.5	\$ 173.00	034-1225
Nd:YAG	1064	25.4	5.0	≥99.5	\$ 184.00	034-1240
Nd:YAG	1064	30.0	5.0	≥99.5	\$ 200.00	034-1250
Nd:YAG	1064	40.0	6.0	≥99.5	\$ 275.00	034-1260
Nd:YAG	1064	50.0	8.0	≥99.5	\$ 299.00	034-1270
Nd:YAG	1064	50.8	8.0	≥99.5	\$ 299.00	034-1280
Diode	1550	12.7	5.0	≥99.5	\$ 152.00	034-1360
Diode	1550	19.1	5.0	≥99.5	\$ 173.00	034-1370
Diode	1550	25.4	5.0	≥99.5	\$ 184.00	034-1380
Diode	1550	50.8	8.0	≥99.5	\$ 299.00	034-1390
Holmium/YAG	2100	12.7	5.0	≥99.5	\$ 152.00	034-1330
Holmium/YAG	2100	19.1	5.0	≥99.5	\$ 173.00	034-1335
Holmium/YAG	2100	25.4	5.0	≥99.5	\$ 184.00	034-1340
Holmium/YAG	2100	50.8	8.0	≥99.5	\$ 299.00	034-1350



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High performance optical coatings require pristine substrates. We ensure that all contaminants are removed from our substrates in a clean room environment before the coating process begins.

Laser Line Wide Angle Mirrors

- High Reflectance at laser line wavelengths
- Designed for wide angle use 0-45 degrees
- Multilayer dielectric coatings, optimized for design wavelength



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Specifications & Tolerances

Surface flatness: $\lambda/10$

Surface quality: 20-10

Thickness: ± 0.1 mm

Bevel: 0.3mm x 45° typical

Diameter: +0, -0.1mm

Parallelism: ≤ 3 arcmin

Clear aperture: 90%

Material: BK7 or equivalent

Laser Line Wide Angle Mirrors

Wavelength Range (nm)	Diameter, D (mm)	Thickness, t (mm)	Rear Surface	Reflectance (%)	Angle of Incidence (°)	Price	PART NUMBER
405	15.0	3.0	Ground	≥ 99.0	0-45	\$ 115.00	034-2811
405	25.4	5.0	Polished	≥ 99.0	0-45	\$ 125.00	034-2815
405	30.0	5.0	Polished	≥ 99.0	0-45	\$ 175.00	034-2816
405	50.0	8.0	Polished	≥ 99.0	0-45	\$ 245.00	034-2818
532	25.4	5.0	Polished	≥ 99.0	0-45	\$ 125.00	034-2835
532	30.0	5.0	Polished	≥ 99.0	0-45	\$ 175.00	034-2836
532	50.0	8.0	Polished	≥ 99.0	0-45	\$ 245.00	034-2838
425-675	15.0	3.0	Ground	≥ 99.0	0-45	\$ 175.00	034-2841
425-675	25.4	5.0	Polished	≥ 99.0	0-45	\$ 225.00	034-2845
425-675	30.0	5.0	Polished	≥ 99.0	0-45	\$ 245.00	034-2846
425-675	50.0	8.0	Polished	≥ 99.0	0-45	\$ 375.00	034-2848
780	15.0	3.0	Ground	≥ 99.0	0-45	\$ 115.00	034-2851
780	25.4	5.0	Polished	≥ 99.0	0-45	\$ 125.00	034-2855
780	30.0	5.0	Polished	≥ 99.0	0-45	\$ 175.00	034-2856
830	15.0	3.0	Ground	≥ 99.0	0-45	\$ 115.00	034-2861
830	25.4	5.0	Polished	≥ 99.0	0-45	\$ 125.00	034-2865
830	30.0	5.0	Polished	≥ 99.0	0-45	\$ 175.00	034-2866
1064	25.4	5.0	Polished	≥ 99.0	0-45	\$ 215.00	034-2875
1064	30.0	5.0	Polished	≥ 99.0	0-45	\$ 225.00	034-2876
1064	50.0	8.0	Polished	≥ 99.0	0-45	\$ 295.00	034-2878
1300	15.0	3.0	Ground	≥ 99.0	0-45	\$ 175.00	034-2881
1300	25.4	5.0	Polished	≥ 99.0	0-45	\$ 225.00	034-2885
1300	30.0	5.0	Polished	≥ 99.0	0-45	\$ 315.00	034-2886
1550	15.0	3.0	Ground	≥ 99.0	0-45	\$ 175.00	034-2891
1550	25.4	5.0	Polished	≥ 99.0	0-45	\$ 225.00	034-2895
1550	30.0	5.0	Polished	≥ 99.0	0-45	\$ 315.00	034-2896

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Laser Line High Power Mirrors

- High Reflectance at laser line wavelengths
- Designed for use at 45 degrees
- Multilayer dielectric coatings, optimized for design wavelength



Specifications & Tolerances

Surface flatness: $\lambda/10$
Surface quality: 20-10
Thickness: ± 0.1 mm
Bevel: 0.3mm x 45° typical

Diameter: +0, -0.1mm
Parallelism: ≤ 3 arcmin
Clear aperture: 90%
Material: BK7 or equivalent

Laser Damage Threshold
Wavelength: 193nm 2J/cm²
248nm 4J/cm²
266nm 5J/cm²

355nm 8J/cm²
532nm 26.5J/cm²
1064nm 28J/cm²

(Tested with pulse width =10nsec, repetition 20Hz)

Laser Line High Power Mirrors

Wavelength Range (nm)	Diameter, D (mm)	Thickness, t (mm)	Rear Surface	Reflectance (%)	Price	PART NUMBER
193	25.4	5.0	Polished	≥ 95.0	\$ 325.00	034-4510
193	30.0	5.0	Polished	≥ 95.0	\$ 340.00	034-4512
193	50.0	8.0	Polished	≥ 95.0	\$ 495.00	034-4514
248	25.4	5.0	Polished	≥ 98.0	\$ 325.00	034-4520
248	30.0	5.0	Polished	≥ 98.0	\$ 340.00	034-4522
248	50.0	8.0	Polished	≥ 98.0	\$ 495.00	034-4524
266	25.4	5.0	Polished	≥ 98.0	\$ 325.00	034-4530
266	30.0	5.0	Polished	≥ 98.0	\$ 340.00	034-4532
266	50.0	8.0	Polished	≥ 98.0	\$ 495.00	034-4534
355	25.4	5.0	Polished	≥ 99.0	\$ 325.00	034-4540
355	30.0	5.0	Polished	≥ 99.0	\$ 340.00	034-4542
355	50.0	8.0	Polished	≥ 99.0	\$ 495.00	034-4544
532	25.4	5.0	Polished	≥ 99.0	\$ 215.00	034-4550
532	30.0	5.0	Polished	≥ 99.0	\$ 225.00	034-4552
532	50.0	8.0	Polished	≥ 99.0	\$ 425.00	034-4554
1064	25.4	5.0	Polished	≥ 99.0	\$ 325.00	034-4560
1064	30.0	5.0	Polished	≥ 99.0	\$ 340.00	034-4562
1064	50.0	8.0	Polished	≥ 99.0	\$ 495.00	034-4564

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Broadband Dielectric Mirrors

- Designs for tunable and white-light applications
- Polished to $\lambda/10$ minimizing subsurface structure
- ≤ 3 arcmin parallelism
- 30-100 dielectric layer designs for high reflectance
- Designed for 45 degree angle of incidence
- Standard diameters from 12.7 to 50.8mm



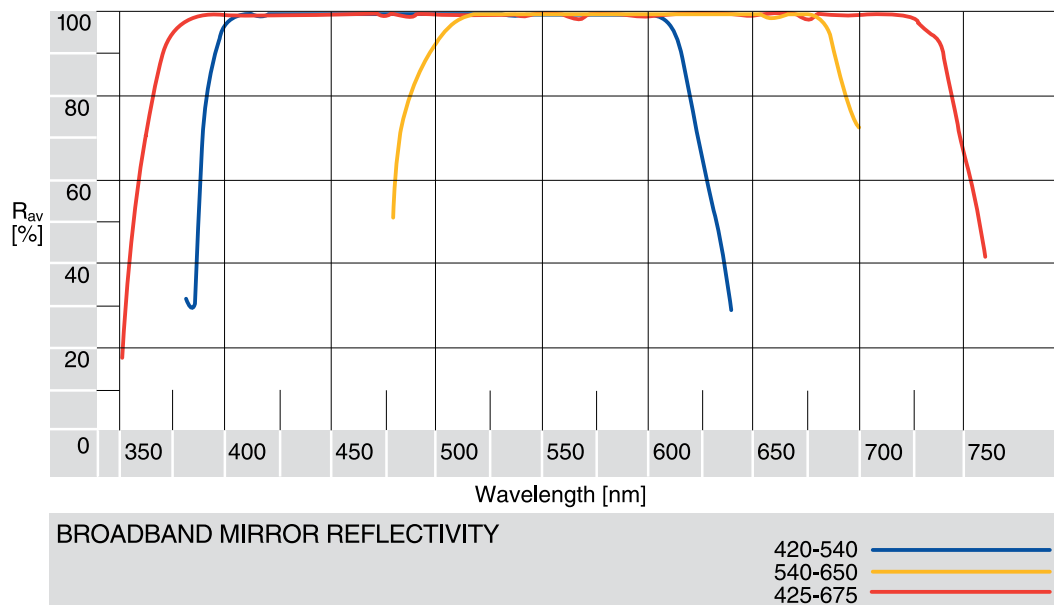
These mirrors have the same exceptional specifications as our laser mirrors except that they use special multilayer coatings to achieve a very high degree of reflectance for both s- and p-polarizations over a broad wavelength range. For white light or tunable laser use these mirrors provide the ultimate in high reflectance and insignificant polarization effect.

The reflectance of these coatings is consistently greater than 99.5% average. However, this figure includes very small dips in the p-reflectance which can never be completely eliminated. The s-polarization component has a reflectance greater than 99.9% over the entire range. (See curves below and on opposite page)

Specifications & Tolerances

Surface flatness: $\lambda/10$
 Surface quality: 20-10
 Thickness: ± 0.1 mm
 Bevel: 0.2mmx45° typical
 Durability: to MIL-C-675

Reflectance: $R > 99.0\%$ (45° incidence)
 Diameter: +0, -0.1mm
 Parallelism: ≤ 3 arcmin
 Clear aperture: $> 90\%$ diameter
 Material: BK7, grade A

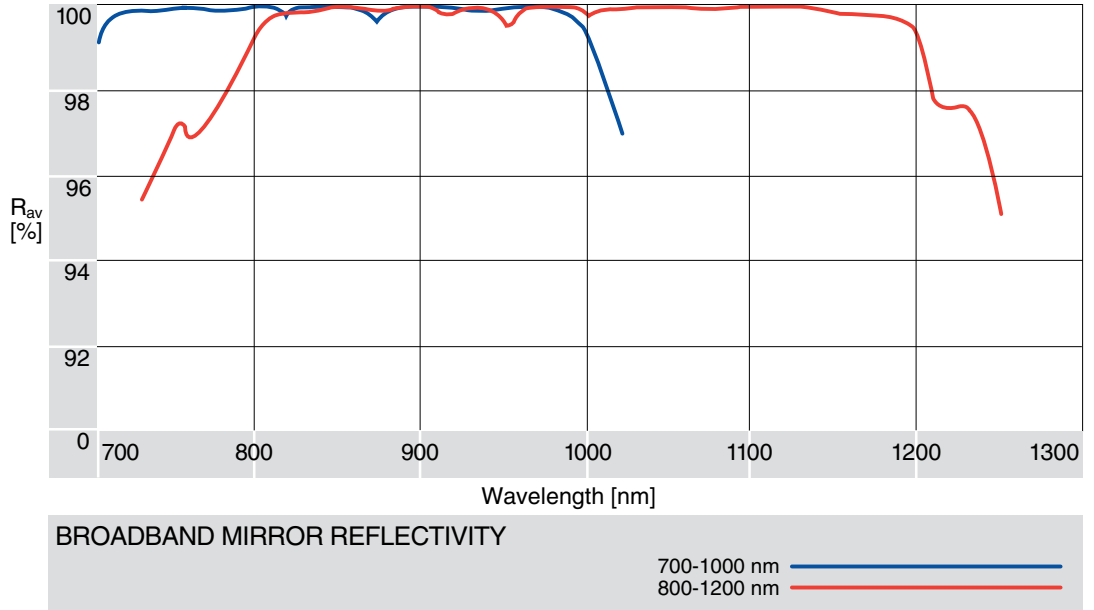


Because the coatings on these Broadband Mirrors cover a very wide portion of the visible spectrum, they are ideal for imaging and data transfer applications where the spectral information is important. The coatings covering the entire visible spectrum have a slightly lower reflectivity than the other two coatings (which, on the other hand, are better matched, spectrally, to many detectors and electronic vision systems).

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Broadband Mirrors

Wavelength Range (nm)	Diameter, D (mm)	Thickness, t (mm)	Rear Surface	Reflectance (%)	Price	PART NUMBER
420-540	12.7	5.0	Polished	≥99.0	\$ 74.00	034-2270
420-540	19.1	5.0	Polished	≥99.0	\$ 84.00	034-2275
420-540	25.4	5.0	Polished	≥99.0	\$ 100.00	034-2280
420-540	30.0	5.0	Polished	≥99.0	\$ 121.00	034-2290
420-540	50.0	8.0	Polished	≥99.0	\$ 231.00	034-2330
420-540	50.8	8.0	Polished	≥99.0	\$ 231.00	034-2340
420-480	12.7	5.0	Polished	≥99.5	\$ 100.00	034-0440
420-480	19.1	5.0	Polished	≥99.5	\$ 116.00	034-0445
420-480	25.4	5.0	Polished	≥99.5	\$ 121.00	034-0450
420-480	30.0	5.0	Polished	≥99.5	\$ 131.00	034-0460
420-480	50.0	8.0	Polished	≥99.5	\$ 205.00	034-0470
420-480	50.8	8.0	Polished	≥99.5	\$ 205.00	034-0480
425-675	12.7	5.0	Polished	≥99.0	\$ 74.00	034-2220
425-675	19.1	5.0	Polished	≥99.0	\$ 84.00	034-2225
425-675	25.4	5.0	Polished	≥99.0	\$ 100.00	034-2230
425-675	30.0	5.0	Polished	≥99.0	\$ 121.00	034-2240
425-675	50.8	8.0	Polished	≥99.0	\$ 231.00	034-2260
480-540	12.7	5.0	Polished	≥99.5	\$ 100.00	034-0490
480-540	15.0	5.0	Ground	≥99.5	\$ 110.00	034-0493
480-540	19.1	5.0	Polished	≥99.5	\$ 116.00	034-0495
480-540	20.0	5.0	Gound	≥99.5	\$ 118.00	034-0520
480-540	25.0	5.0	Polished	≥99.5	\$ 121.00	034-0530
480-540	25.4	5.0	Polished	≥99.5	\$ 121.00	034-0550
480-540	30.0	5.0	Polished	≥99.5	\$ 131.00	034-0560
480-540	50.0	8.0	Polished	≥99.5	\$ 205.00	034-0570
480-540	50.8	8.0	Polished	≥99.5	\$ 205.00	034-0580
540-660	12.7	5.0	Polished	≥99.0	\$ 74.00	034-2350
540-660	19.1	5.0	Polished	≥99.0	\$ 84.00	034-2355
540-660	25.4	5.0	Polished	≥99.0	\$ 100.00	034-2360
540-660	30.0	5.0	Polished	≥99.0	\$ 121.00	034-2370
540-660	50.0	8.0	Polished	≥99.0	\$ 231.00	034-2380
540-660	50.8	8.0	Polished	≥99.0	\$ 231.00	034-2390

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Broadband Mirrors (continued)

Wavelength Range (nm)	Diameter, D (mm)	Thickness, t (mm)	Rear Surface	Reflectance (%)	Price	PART NUMBER
570-640	12.7	5.0	Polished	≥99.5	\$ 100.00	034-0770
570-640	15.0	5.0	Ground	≥99.5	\$ 110.00	034-0773
570-640	19.1	5.0	Polished	≥99.5	\$ 116.00	034-0775
570-640	20.0	5.0	Ground	≥99.5	\$ 118.00	034-0777
570-640	25.0	5.0	Polished	≥99.5	\$ 121.00	034-0779
570-640	25.4	5.0	Polished	≥99.5	\$ 121.00	034-0780
570-640	30.0	5.0	Polished	≥99.5	\$ 131.00	034-0790
570-640	50.0	8.0	Polished	≥99.5	\$ 205.00	034-0880
570-640	50.8	8.0	Polished	≥99.5	\$ 205.00	034-0890
630-700	12.7	5.0	Polished	≥99.5	\$ 63.00	034-0990
630-700	19.1	5.0	Polished	≥99.5	\$ 79.00	034-0995
630-700	25.4	5.0	Polished	≥99.5	\$ 100.00	034-1110
630-700	30.0	5.0	Polished	≥99.5	\$ 105.00	034-1120
630-700	50.8	8.0	Polished	≥99.5	\$ 205.00	034-1140
770-840	12.7	5.0	Polished	≥99.5	\$ 100.00	034-1150
770-840	15.0	5.0	Ground	≥99.5	\$ 110.00	034-1153
770-840	19.1	5.0	Polished	≥99.5	\$ 116.00	034-1155
770-840	20.0	5.0	Ground	≥99.5	\$ 118.00	034-1157
770-840	25.0	5.0	Polished	≥99.5	\$ 121.00	034-1159
770-840	25.4	5.0	Polished	≥99.5	\$ 121.00	034-1160
770-840	30.0	5.0	Polished	≥99.5	\$ 131.00	034-1170
770-840	50.0	8.0	Polished	≥99.5	\$ 205.00	034-1180
770-840	50.8	8.0	Polished	≥99.5	\$ 205.00	034-1190
700-1000	12.7	5.0	Polished	≥99.0	\$ 84.00	034-1200
700-1000	19.1	5.0	Polished	≥99.0	\$ 105.00	034-1205
700-1000	25.4	5.0	Polished	≥99.0	\$ 116.00	034-1210
700-1000	50.8	8.0	Polished	≥99.0	\$ 231.00	034-1215
800-1200	12.7	5.0	Polished	≥99.0	\$ 116.00	034-2460
800-1200	19.1	5.0	Polished	≥99.0	\$ 126.00	034-2465
800-1200	25.4	5.0	Polished	≥99.0	\$ 137.00	034-2470
800-1200	50.8	8.0	Polished	≥99.0	\$ 268.00	034-2480

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High performance optical coatings require pristine substrates. We ensure that all contaminants are removed from our substrates in a clean room environment before the coating process begins.

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Ultra Broadband Mirrors

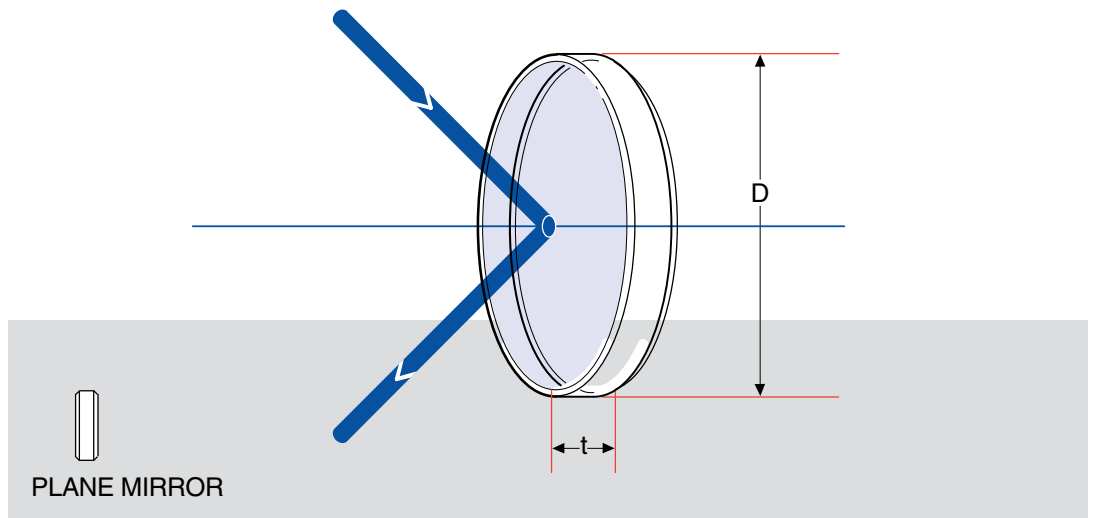
- All Dielectric multilayer coated
- Visible, near infrared and other multiple wavelengths are covered with a single mirror



Specifications & Tolerances

Surface flatness: $\lambda/10$
 Surface quality: 40-20
 Thickness: $\pm 0.1\text{mm}$
 Bevel: $0.2\text{mm} \times 45^\circ$ typical

Diameter: $+0, -0.1\text{mm}$
 Parallelism: $\leq 3\text{arcmin}$
 Clear aperture: 90%
 Material: BK7 or equivalent



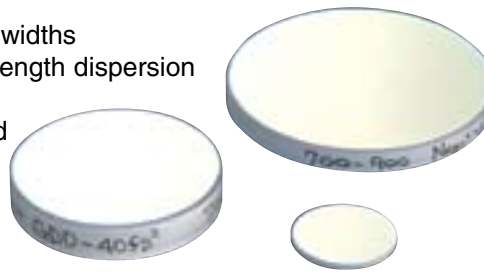
Ultra Broadband Mirrors

Wavelength Range (nm)	Diameter, D (mm)	Thickness, t (mm)	Rear Surface	Reflectance (%)	Price	PART NUMBER
245-400	25.4	5.0	Polished	Ave ≥ 97.0	\$ 325.00	034-2712
245-400	30.0	5.0	Polished	Ave ≥ 97.0	\$ 340.00	034-2713
245-700	25.4	5.0	Polished	Ave ≥ 97.0	\$ 435.00	034-2722
245-700	30.0	5.0	Polished	Ave ≥ 97.0	\$ 450.00	034-2723
400-1100	25.4	5.0	Polished	Ave ≥ 98.0	\$ 295.00	034-2732
400-1100	30.0	5.0	Polished	Ave ≥ 98.0	\$ 310.00	034-2733
400-1100	50.0	8.0	Polished	Ave ≥ 98.0	\$ 460.00	034-2725
400-2000	25.4	5.0	Polished	Ave ≥ 98.0	\$ 435.00	034-2742
400-2000	30.0	5.0	Polished	Ave ≥ 98.0	\$ 450.00	034-2743
400-2000	50.0	8.0	Polished	Ave ≥ 98.0	\$ 590.00	034-2745
300-2000	25.4	5.0	Polished	Ave ≥ 97.0	\$ 575.00	034-2752
300-2000	30.0	5.0	Polished	Ave ≥ 97.0	\$ 590.00	034-2753
300-2000	50.0	8.0	Polished	Ave ≥ 97.0	\$ 735.00	034-2755

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Low Dispersion Mirrors for Femtosecond Laser

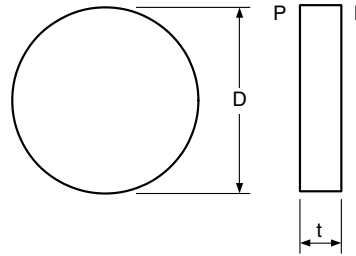
- Designed for lasers with femtosecond pulse widths
- Multi-layer dielectric design minimizes wavelength dispersion
- Manufactured by plasma deposition method to provide use over a wider wavelength band
- Available in two types, high damage or broad wavelength
- Offered in 25.4 and 30.0mm diameters, custom sizes are available on request



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Specifications & Tolerances

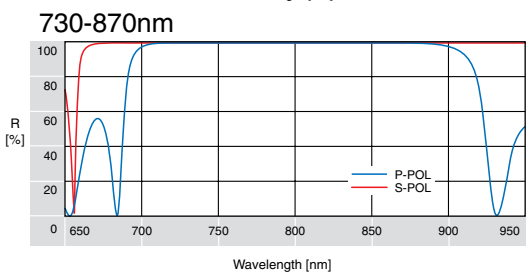
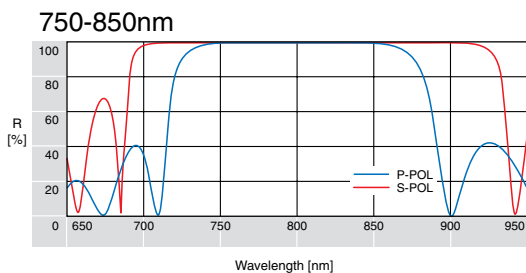
Material:	BK7
Coating:	Dielectric multilayer
Wavelength of surface flatness measurement:	632.8nm
Surface flatness:	$\lambda/10$
Parallelism:	≤ 5 arcsec
Surface quality:	20-10
Clear aperture:	80% of diameter



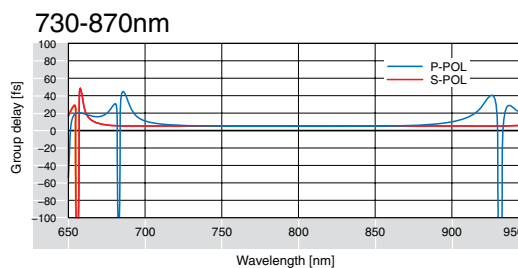
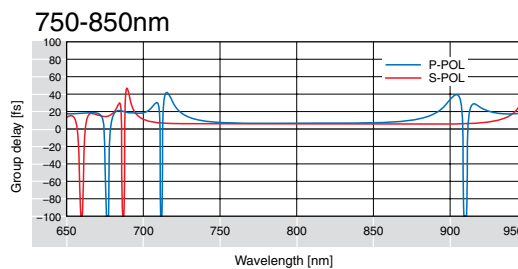
Low Dispersion Mirrors for Femtosecond Laser

Wavelength Range (nm)	Laser Type	Diameter, D (mm)	Thickness, t (mm)	Reflectance	Angle of incidence	Price	PART NUMBER
750-850	Ti:Sapphire	25.4	5	$\geq 99.8\%$	$45^\circ \pm 3^\circ$	\$ 370.00	034-4112
750-850	Ti:Sapphire	30	5	$\geq 99.8\%$	$45^\circ \pm 3^\circ$	\$ 410.00	034-4113
730-870	Ti:Sapphire	25.4	5	$\geq 99.8\%$	$45^\circ \pm 3^\circ$	\$ 370.00	034-4115
730-870	Ti:Sapphire	30	5	$\geq 99.8\%$	$45^\circ \pm 3^\circ$	\$ 410.00	034-4116

Reflectance (Reference Data)



Group Delay (Reference Data)



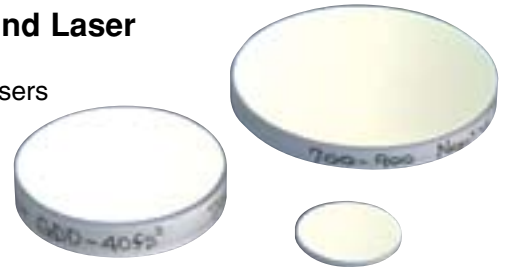
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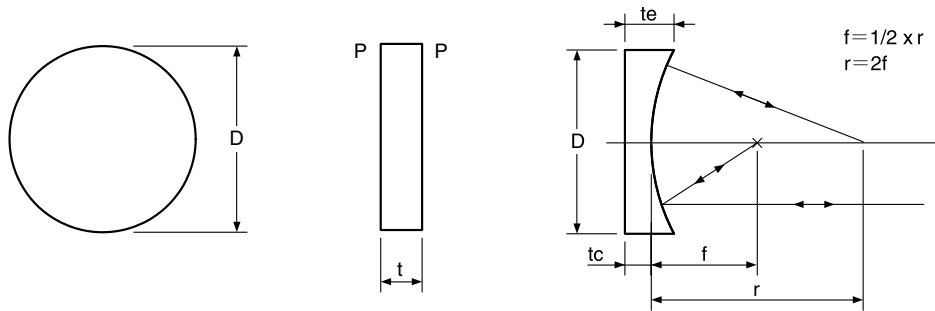
Negative Dispersion Mirrors for Femtosecond Laser

- Designed for pulse compression in Femtosecond lasers
- Offered in 25.4 and 30.0mm diameter plano mirrors
- Center wavelength is for Ti:Sapphire at 800nm.
- Concave mirrors available with 50, 100, 500 and 1000mm radius



Specifications & Tolerances

Material:	BK7
Coating:	Dielectric multilayer
Angle of incidence:	0-20°
Wavelength of surface flatness measurement:	632.8nm
Surface flatness:	$\lambda/10$
Parallelism:	≤ 5 arcsec
Surface quality:	20-10
Clear aperture:	80% of diameter



Negative Dispersion Mirrors for Femtosecond Laser — FLAT

Wavelength Range (nm)	Laser Type	Diameter, D (mm)	Thickness, t (mm)	Reflectance	Angle of incidence	Price	PART NUMBER
700-900	Ti:Sapphire	25.4	5	$\geq 99.8\%$	0°-20°	\$ 1,100.00	034-4136
700-900	Ti:Sapphire	30	5	$\geq 99.8\%$	0°-20°	\$ 1,100.00	034-4137

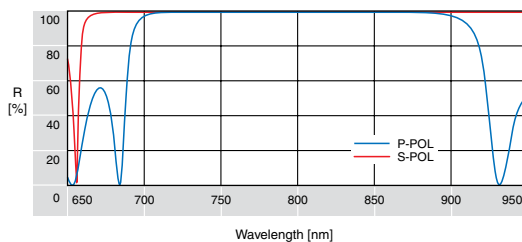
Negative Dispersion Mirrors for Femtosecond Laser — CONCAVE

Wavelength Range (nm)	Laser Type	Diameter, D (mm)	Thickness, te (mm)	r (mm)	Reflectance	Angle of incidence	Price	PART NUMBER
700-900	Ti:Sapphire	30	7	50	$\geq 99.8\%$	0°- 20°	\$ 1,100.00	034-4131
700-900	Ti:Sapphire	30	7	100	$\geq 99.8\%$	0°- 20°	\$ 1,100.00	034-4132
700-900	Ti:Sapphire	30	5	500	$\geq 99.8\%$	0°- 20°	\$ 1,100.00	034-4133
700-900	Ti:Sapphire	30	5	1000	$\geq 99.8\%$	0°- 20°	\$ 1,100.00	034-4134

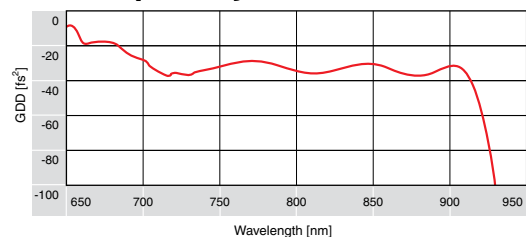
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Reflectance (Reference Data)



Group Delay (Reference Data)



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Filter & Apertures

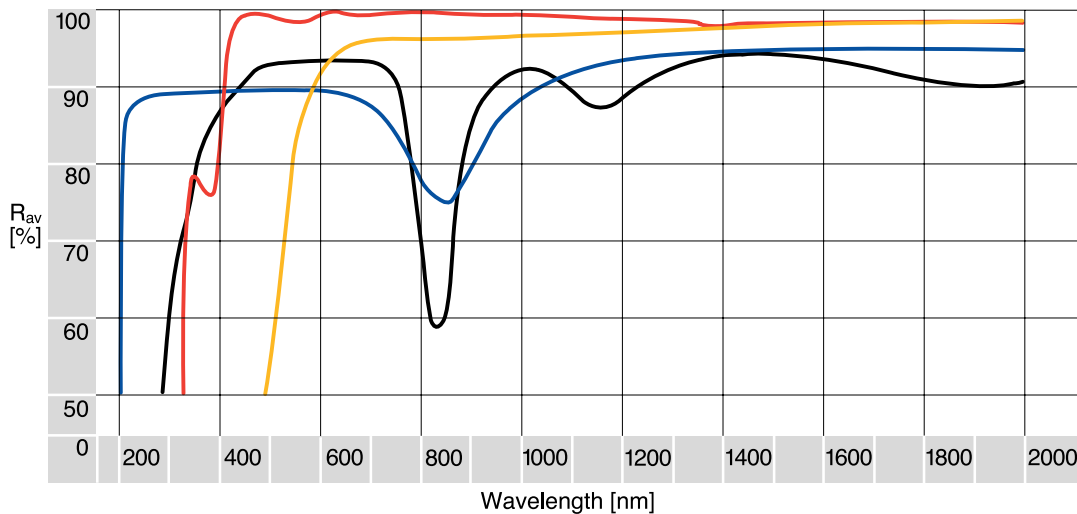
Ultra-broadband Metallic Mirrors

- High reflectance over a broad spectral range
- Enhanced reflectance in the visible range
- Effective over wide angles of incidence
- Standard diameters from 12.7 to 50.8mm



These mirrors provide a high reflectance over a very broad spectral bandwidth. They are manufactured by coating first with a reflective metal film and then with a dielectric overcoat for protection and enhancement of the reflectivity. Coatings offered include aluminum, silver and gold. Each has a different spectral characteristic as shown in the curves. Aluminum provides a good general purpose visible range mirror. Silver has a very high reflectance over the visible and near infra-red range and gold is the preferred coating for infra-red applications at wavelengths greater than 2 microns. We use only highly polished laser grade substrates with $\lambda/10$ surfaces and low scatter. Unlike dielectric coatings, these mirrors can be used over a wide range of angles of incidence. However, they do affect the state of polarization of the reflected beam.

Standard sizes are 1/2 inch, 3/4 inch, 1 inch and 2 inches in diameter - other shapes and sizes are available on request.



ULTRA-BROADBAND
MIRROR REFLECTIVITY
AOI: 45°

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ENHANCED UV ALUMINUM ———

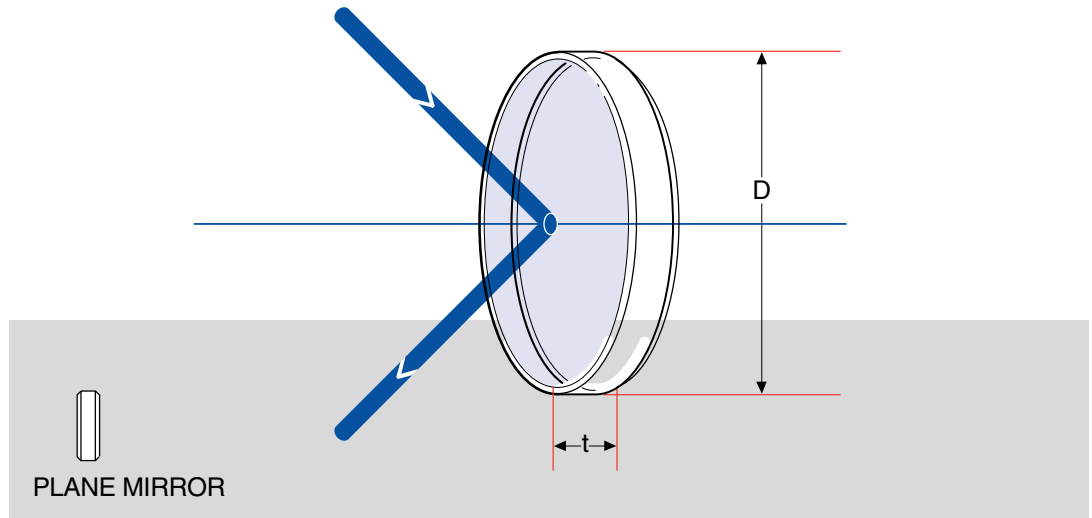
ENHANCED SILVER ———
PROTECTED GOLD ———

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- Substrates & Windows
- Beamsplitters
- Polarizers
- Filter & Apertures



Specifications & Tolerances

Surface flatness: $\lambda/10$
 Surface quality: 20-10
 Thickness: $\pm 0.1\text{mm}$
 Bevel: $0.2\text{mm} \times 45^\circ$ typical
 Laser damage threshold: $0.5\text{J}/\text{cm}^2$ for 10ns pulse
 Durability: to MIL-C-675

Diameter: $+0, -0.2\text{mm}$
 Parallelism: $\leq 3\text{arcmin}$
 Clear aperture: $>90\%$ diameter
 Material: BK7, grade A

Ultra-broadband Metallic Mirrors

Type	Reflectance (%)	Wavelength Range (nm)	Diameter, D (inches) (mm)		Thickness, t (mm)	Price	PART NUMBER
UV Enhanced Aluminum	>85.0av	250-400	0.50	12.7	5.0	\$ 47.00	033-4340
UV Enhanced Aluminum	>85.0av	250-400	0.75	19.1	5.0	\$ 58.00	033-4350
UV Enhanced Aluminum	>85.0av	250-400	1.00	25.4	5.0	\$ 65.00	033-4360
UV Enhanced Aluminum	>85.0av	250-400	2.00	50.8	8.0	\$ 116.00	033-4370
Enhanced Aluminum	>94.0av	400-700	0.50	12.7	5.0	\$ 47.00	033-4440
Enhanced Aluminum	>94.0av	400-700	0.75	19.1	5.0	\$ 58.00	033-4450
Enhanced Aluminum	>94.0av	400-700	1.00	25.4	5.0	\$ 65.00	033-4460
Enhanced Aluminum	>94.0av	400-700	2.00	50.8	8.0	\$ 116.00	033-4470
Enhanced Silver	>96.0av	400-700	0.50	12.7	5.0	\$ 58.00	033-4540
Enhanced Silver	>97.5av	700-2000	0.75	19.1	5.0	\$ 76.00	033-4550
	>96.0av	400-700					
Enhanced Silver	>97.5av	700-2000	1.00	25.4	5.0	\$ 84.00	033-4560
	>96.0av	400-700					
Enhanced Silver	>97.5av	700-2000	2.00	50.8	8.0	\$ 131.00	033-4570
	>96.0av	400-700					
Protected Gold	>96.0av	650-IR	0.50	12.7	5.0	\$ 74.00	033-4640
Protected Gold	>96.0av	650-IR	0.75	19.1	5.0	\$ 89.00	033-4650
Protected Gold	>96.0av	650-IR	1.00	25.4	5.0	\$ 100.00	033-4660
Protected Gold	>96.0av	650-IR	2.00	50.8	8.0	\$ 158.00	033-4670

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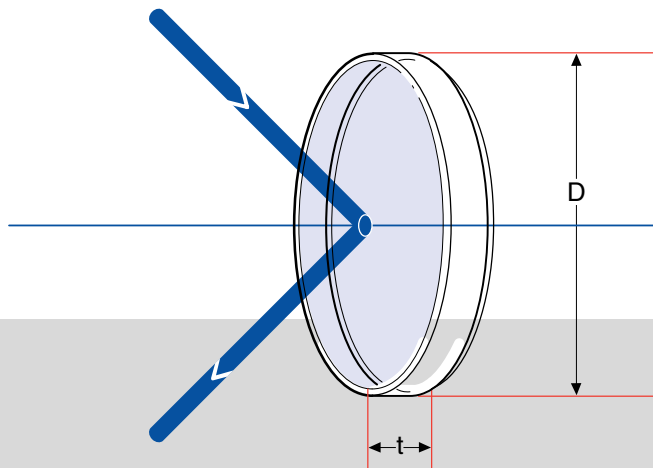
Filter & Apertures

Metallized Mirrors, Round

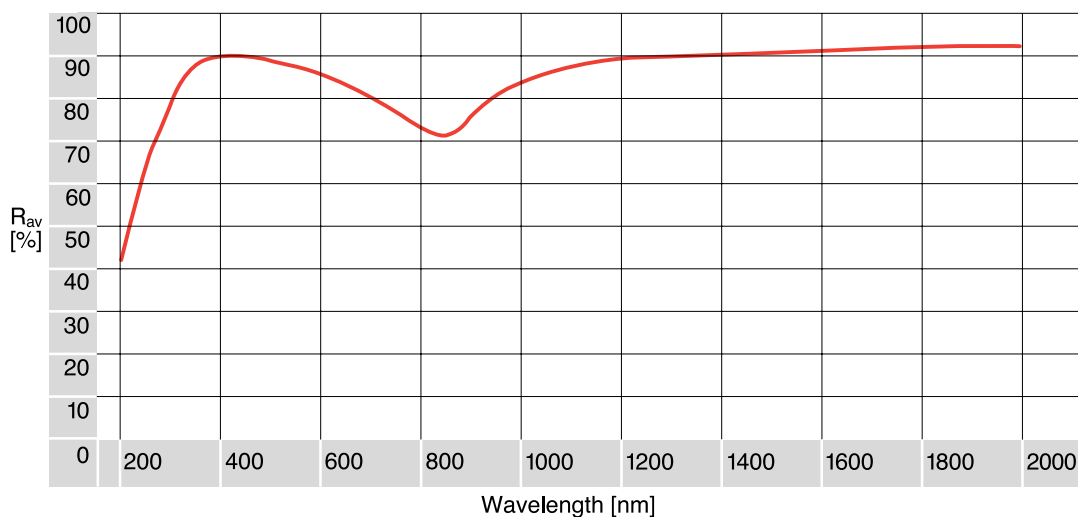
- High reflectance over entire visible and NIR spectrum
- Aluminum overcoated with MgF_2 for high durability
- Ideal for non-critical applications
- Available with $\lambda/4$, $\lambda/10$, and $\lambda/20$ surface flatness
- Synthetic quartz and Zerodur® available for high thermal stability
- Standard diameters from 5.0 to 152.4mm

Specifications & Tolerances

Surface flatness: $\lambda/4$, $\lambda/10$, $\lambda/20$ Diameter: +0, -0.2mm
 Surface quality: 40-20 Parallelism: ≤ 3 arcmin
 Thickness: ± 0.1 mm
 Clear aperture: >90% diameter
 Bevel: 0.2mmx45° typical
 Laser damage threshold: 0.4J/cm² for 532nm @10ns pulse
 Durability: to MIL-C-675
 Reflectance: R>88% (350-2000nm)



PLANE MIRROR



ALUMINUM COATING REFLECTIVITY

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 Filter & Apertures

Metallized Mirrors, Round

Flatness	Diameter, D (inches) (mm)		Thickness, t (mm)	Material	Price	PART NUMBER
$\lambda/4$	0.20	5.0	3.0	BK7	\$ 27.00	033-0230
$\lambda/4$	0.39	10.0	3.0	BK7	\$ 29.00	033-0240
$\lambda/4$	0.50	12.7	5.0	BK7	\$ 32.00	033-0250
$\lambda/4$	0.79	20.0	5.0	BK7	\$ 34.00	033-0260
$\lambda/4$	0.98	25.0	5.0	BK7	\$ 37.00	033-0270
$\lambda/4$	1.00	25.4	5.0	BK7	\$ 39.00	033-0280
$\lambda/4$	1.18	30.0	5.0	BK7	\$ 42.00	033-0290
$\lambda/4$	1.57	40.0	6.0	BK7	\$ 53.00	033-0330
$\lambda/4$	1.97	50.0	8.0	BK7	\$ 63.00	033-0340
$\lambda/4$	2.00	50.8	8.0	BK7	\$ 63.00	033-0350
$\lambda/4$	3.00	76.2	12.0	BK7	\$ 205.00	033-0355
$\lambda/4$	3.15	80.0	12.0	BK7	\$ 225.00	033-0360
$\lambda/4$	3.94	100.0	15.0	BK7	\$ 225.00	033-0370
$\lambda/4$	4.00	101.6	15.0	BK7	\$ 265.00	033-0375
$\lambda/4$	5.91	150.0	20.0	BK7	\$ 650.00	033-0380
$\lambda/4$	6.00	152.4	20.0	BK7	\$ 725.00	033-0385
$\lambda/10$	0.20	5.0	3.0	BK7	\$ 29.00	033-0440
$\lambda/10$	0.39	10.0	5.0	BK7	\$ 34.00	033-0450
$\lambda/10$	0.39	10.0	3.0	BK7	\$ 32.00	033-0460
$\lambda/10$	0.50	12.7	5.0	BK7	\$ 35.00	033-0470
$\lambda/10$	0.59	15.0	5.0	BK7	\$ 38.00	033-0480
$\lambda/10$	0.59	15.0	3.0	BK7	\$ 37.00	033-0490
$\lambda/10$	0.79	20.0	3.0	BK7	\$ 40.00	033-0550
$\lambda/10$	0.79	20.0	5.0	BK7	\$ 41.00	033-0560
$\lambda/10$	0.98	25.0	5.0	BK7	\$ 46.00	033-0570
$\lambda/10$	1.00	25.4	5.0	BK7	\$ 46.00	033-0660
$\lambda/10$	1.18	30.0	5.0	BK7	\$ 53.00	033-0670
$\lambda/10$	1.57	40.0	6.0	BK7	\$ 74.00	033-0680
$\lambda/10$	1.97	50.0	8.0	BK7	\$ 77.00	033-0770
$\lambda/10$	2.00	50.8	8.0	BK7	\$ 77.00	033-0780
$\lambda/10$	3.00	76.2	12.0	BK7	\$ 245.00	033-0790
$\lambda/10$	3.15	80.0	12.0	BK7	\$ 250.00	033-0890
$\lambda/10$	4.00	101.6	17.0	Zerodur®	\$ 730.00	033-1120
$\lambda/10$	6.00	152.4	25.0	Zerodur®	\$ 1,395.00	033-1140
$\lambda/20$	0.39	10.0	6.0	SFS	\$ 50.00	033-1145
$\lambda/20$	0.50	12.7	6.0	SFS	\$ 63.00	033-1150
$\lambda/20$	0.59	15.0	6.0	SFS	\$ 65.00	033-1153
$\lambda/20$	0.79	20.0	6.0	SFS	\$ 60.00	033-1155
$\lambda/20$	0.98	25.0	6.0	SFS	\$ 75.00	033-1160
$\lambda/20$	1.00	25.4	6.0	SFS	\$ 79.00	033-1170
$\lambda/20$	1.18	30.0	6.0	SFS	\$ 95.00	033-1175
$\lambda/20$	1.57	40.0	8.0	SFS	\$ 135.00	033-1180
$\lambda/20$	1.97	50.0	10.0	SFS	\$ 231.00	033-1190
$\lambda/20$	2.00	50.8	10.0	SFS	\$ 231.00	033-1220

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Metallized Mirrors, Square & Rectangular

- Large cross-sections at 45 degree angle of incidence
- Aluminum overcoated with MgF_2 for high durability
- Easy for OEM mounting
- Available with $\lambda/4$, $\lambda/10$, and $\lambda/20$ surface flatness
- Synthetic Fused Silica available for high thermal stability



While the round mirrors fit perfectly in the Mirror Mounts described on pages 247-267, these square and rectangular mirrors are often very convenient to mount in prototype and experimental setups. The rectangular shapes are most useful in beam steering applications at 45 degrees.

These square and rectangular metallized mirrors are identical to the round metallized mirrors described on the preceding three pages. The rectangular shapes are useful at 45 degrees since they present a more nearly square cross section to the beam.

The reflectance curve for these mirrors may be found on page 130. As with the round metallized mirrors there are three levels of flatness available: $\lambda/4$, $\lambda/10$ and $\lambda/20$. The $\lambda/20$ mirrors have a synthetic quartz substrate for thermal stability.

A selection of sizes are offered as standard. Other sizes can be supplied on request. Please call. Mirrors up to 1 inch square have a ground rear surface but all other mirrors are polished on the rear face.

Specifications & Tolerances

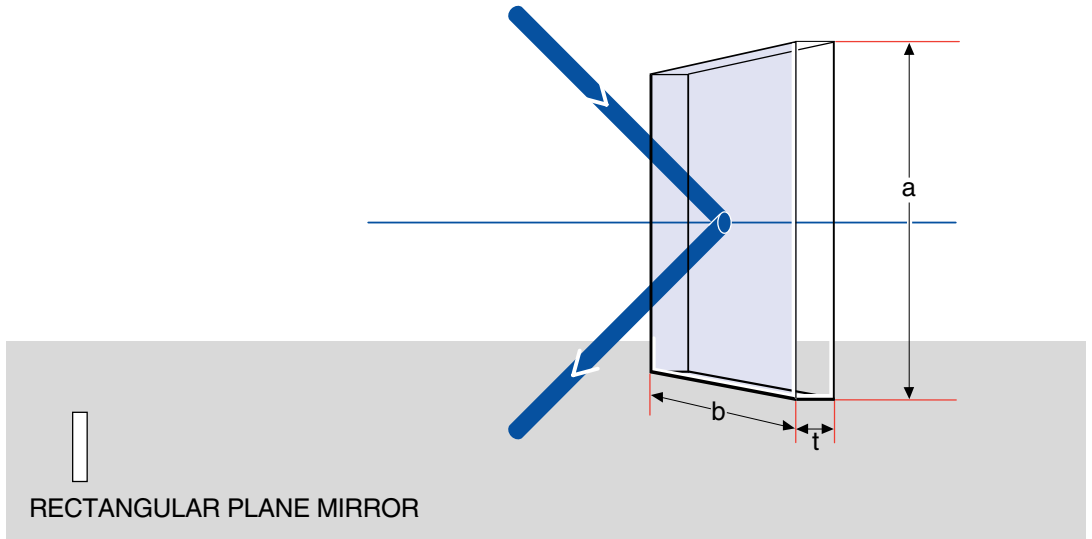
Surface flatness: $\lambda/4$, $\lambda/10$, $\lambda/20$
 Surface quality: 40-20
 Parallelism: ≤ 3 arcmin
 Clear aperture: $>90\%$ diameter
 Bevel: $0.2\text{mm} \times 45^\circ$ typical
 Durability: to MIL-C-675
 Reflectance: $R > 88\%$ (350-1550nm)

Dimensions: $+0$, -0.1mm ,
 except $100 \times 100\text{mm}$ $+0$, -0.2mm
 Thickness: $\pm 0.1\text{mm}$,
 except $100 \times 100\text{mm}$ $\pm 0.2\text{mm}$
 Laser damage threshold: $0.4\text{J}/\text{cm}^2$ for 532nm
 @ 10ns pulse (measured)

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RECTANGULAR PLANE MIRROR

Metallized Mirrors, Square & Rectangular

Flatness	Dimensions (inches) a x b	Dimensions (mm) a x b	Thickness, t (mm)	Material	Price	PART NUMBER
$\lambda/4$	0.39 x 0.59	10.0 x 15.0	5.0	BK7	\$ 37.00	033-3330
$\lambda/4$	0.50 x 0.50	12.7 x 12.7	3.0	BK7	\$ 37.00	033-2260
$\lambda/4$	0.79 x 0.79	20.0 x 20.0	5.0	BK7	\$ 37.00	033-2280
$\lambda/4$	0.98 x 0.98	25.0 x 25.0	5.0	BK7	\$ 45.00	033-2330
$\lambda/4$	0.98 x 1.38	25.0 x 35.0	5.0	BK7	\$ 45.00	033-3340
$\lambda/4$	1.18 x 1.18	30.0 x 30.0	5.0	BK7	\$ 53.00	033-2340
$\lambda/4$	1.57 x 1.57	40.0 x 40.0	6.0	BK7	\$ 84.00	033-2350
$\lambda/4$	1.57 x 1.97	40.0 x 50.0	8.0	BK7	\$ 84.00	033-3350
$\lambda/4$	1.97 x 1.97	50.0 x 50.0	8.0	BK7	\$ 84.00	033-2360
$\lambda/4$	3.94 x 3.94	100.0 x 100.0	15.0	BK7	\$ 475.00	033-2370
$\lambda/10$	0.39 x 0.39	10.0 x 10.0	3.0	BK7	\$ 35.00	033-2390
$\lambda/10$	0.39 x 0.39	10.0 x 10.0	5.0	BK7	\$ 35.00	033-2380
$\lambda/10$	0.39 x 0.59	10.0 x 15.0	5.0	BK7	\$ 42.00	033-3370
$\lambda/10$	0.50 x 0.50	12.7 x 12.7	3.0	BK7	\$ 44.00	033-2420
$\lambda/10$	0.59 x 0.59	15.0 x 15.0	3.0	BK7	\$ 42.00	033-2440
$\lambda/10$	0.59 x 0.59	15.0 x 15.0	5.0	BK7	\$ 42.00	033-2450
$\lambda/10$	0.59 x 0.98	15.0 x 25.0	5.0	BK7	\$ 45.00	033-3375
$\lambda/10$	0.79 x 0.79	20.0 x 20.0	3.0	BK7	\$ 47.00	033-2470
$\lambda/10$	0.79 x 0.79	20.0 x 20.0	5.0	BK7	\$ 47.00	033-2460
$\lambda/10$	0.98 x 0.98	25.0 x 25.0	5.0	BK7	\$ 53.00	033-2490
$\lambda/10$	0.98 x 1.38	25.0 x 35.0	5.0	BK7	\$ 74.00	033-3380
$\lambda/10$	1.18 x 1.18	30.0 x 30.0	5.0	BK7	\$ 74.00	033-2550
$\lambda/10$	1.57 x 1.97	40.0 x 50.0	8.0	Pyrex	\$ 105.00	033-3390
$\lambda/10$	1.97 x 1.97	50.0 x 50.0	8.0	Pyrex	\$ 105.00	033-2580
$\lambda/10$	3.94 x 3.94	100.0 x 100.0	15.0	Pyrex	\$ 420.00	033-2590
$\lambda/20$	0.98 x 0.98	25.0 x 25.0	6.0	Fused Silica	\$ 105.00	033-2680

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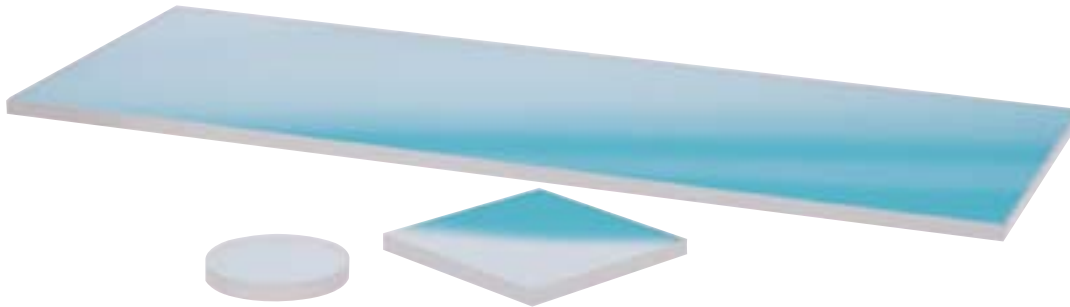
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Ultra-Violet Hot Mirrors

- **Super HeatBuster™ Ultra-Violet Hot Mirrors**
- Excellent visible transmission
- High infrared reflectance
- Superior Ultra-Violet rejection
- Durable coatings will survive extreme heat and high humidity



Here we offer Super HeatBuster™ Ultra-Violet hot mirrors. Hot mirrors are perfect for applications that require high reflectance in the infrared spectrum and excellent transmission in the visible. In addition Super HeatBuster™ Ultra-Violet Hot mirrors offer superior Ultra-Violet rejection with less than 1% transmission from 200 to 390nm.

These hot mirrors are manufactured using a special proprietary all dielectric coating technique that yields the most durable commercially available product. Super HeatBuster™ Ultra-Violet hot mirrors will pass MIL-C-675, snap tape tests and are capable of operation at temperatures as high as 700 degrees C. They will also operate and survive in extreme humidity environments.

Hot mirrors are available from stock in one inch and two inch diameter round or one inch, two inch and four inch square configurations. Larger sheets are also available and may be cut into custom sizes.

Specifications & Tolerances

Dimensions: +/-0.5mm

Thickness: +/-0.3mm

Surface flatness: 3λ per inch

Surface quality: 80-50

AOI: 0-15°

Coating: T>85% avg 420-680nm

T<1.0% avg 200-380nm

T<5.0% avg 730-1500nm

Material: Borofloat™ glass

Max temperature: 700°C

Ultra-Violet Hot Mirrors

Mirror Shape	Dimensions (Inches) (mm)		Thickness (mm)	Price	PART NUMBER
Round	1.00	25.4	3.3	\$ 30.00	034-3010
Round	2.00	50.8	3.3	\$ 65.00	034-3020
Square	1.00 x 1.00	25.4 x 25.4	3.3	\$ 30.00	034-3060
Square	2.00 x 2.00	50.8 x 50.8	3.3	\$ 65.00	034-3070

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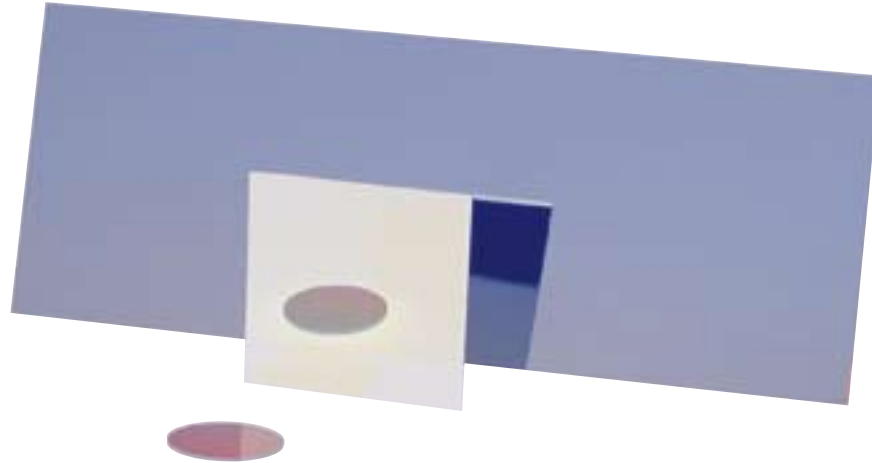
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HeatBuster™ is a registered trademark of DSI.

Cold Mirrors

- **HeatBuster™ Cold Mirrors**
- High visible reflectance
- Excellent infrared transmission
- Durable coatings will survive extreme heat and high humidity



Our HeatBuster™ cold mirrors are perfect for applications that require high reflectance in the visible spectrum and excellent transmission in the infrared. These cold mirrors are manufactured using a special proprietary all dielectric coating technique that yields the most durable commercially available product. Our HeatBuster™ cold mirrors will pass MIL-C-675, snap tape tests and are capable of operation at temperatures as high as 600 degrees C. They will also operate and survive in extreme humidity environments.

Cold mirrors are available from stock in one inch and two inch diameter round or one inch, two inch and four inch square configurations. Larger sheets are also available and may be cut into custom sizes.

Specifications & Tolerances

Dimensions: $\pm 0.5\text{mm}$
 Thickness: $\pm 0.3\text{mm}$
 Surface flatness: 3λ per inch
 Surface quality: 80-50
 AOI: $45^\circ \pm 5^\circ$
 Coating: R>95% avg 420-700nm
 R<20% avg 800-2500nm

Material: Borofloat™ glass
 Max temperature: 600°C

Cold Mirrors

Mirror Shape	Dimensions (Inches)	Dimensions (mm)	Thickness (mm)	Price	PART NUMBER
Round	1.00	25.4	3.3	\$ 30.00	034-3110
Round	2.00	50.8	3.3	\$ 65.00	034-3120
Square	1.00 x 1.00	25.4 x 25.4	3.3	\$ 30.00	034-3160
Square	2.00 x 2.00	50.8 x 50.8	3.3	\$ 65.00	034-3170

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Spherical Mirrors

- Chromatic aberration free for concentrating, collecting, and imaging applications
- Aluminum overcoated with MgF_2 for high durability
- Polished rear surface for easy mounting
- Standard diameters from 15 to 50.8mm

These mirrors are used for laser beam concentration and quality imaging. They can also be used to improve the light output from projection and illumination systems. All spherical mirrors have a focal length equal to half their radius of curvature. The front concave spherical section is polished on a BK7 substrate and then coated with aluminum and MgF_2 .

Mirrors are offered in several sizes with a wide range of curvatures from 10mm to 4m. Other diameters, diameters greater than 50.8mm, and other radii of curvature are also available. Please call.



Specifications & Tolerances

Spherical tolerance: $\lambda/2$

Surface quality: 40-20

Radius of curvature: $\pm 2\%$ Thickness: $\pm 0.2\text{mm}$

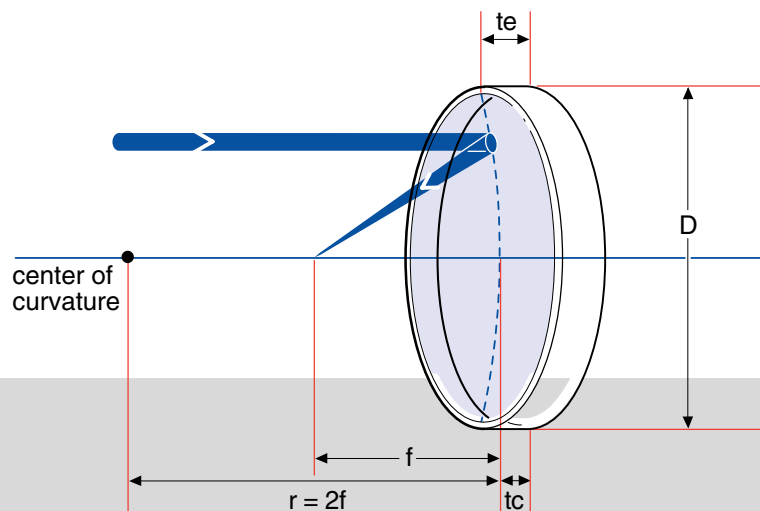
Durability: to MIL-C-675

Reflectance: $R > 85\%$ (400-1550nm)

Diameter: +0, -0.2mm

Clear aperture: $> 85\%$ diameterBevel: 0.2mm x 45° typical

Material: BK7



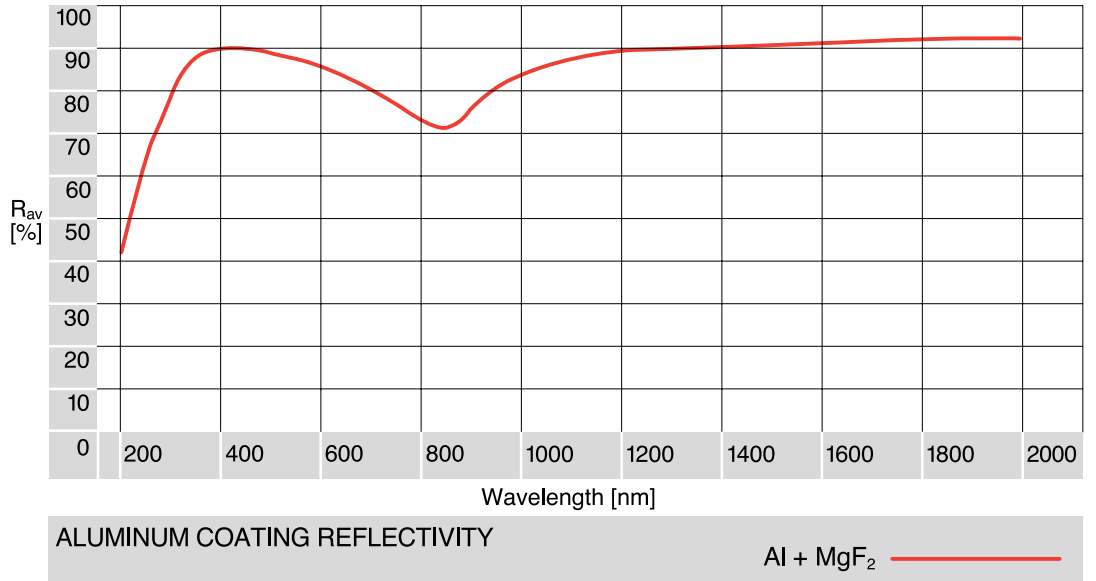
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Spherical Mirrors

Radius of Curvature, r (mm)	Diameter, D (mm)	Edge, te (mm)	Center, tc (mm)	Price	PART NUMBER
10	15.0	7.0	3.6	\$ 120.00	035-0100
20	15.0	5.0	3.5	\$ 120.00	035-0102
30	15.0	5.0	4.0	\$ 120.00	035-0104
40	15.0	5.0	4.3	\$ 120.00	035-0105
50	15.0	5.0	4.4	\$ 120.00	035-0106
50	25.0	7.0	5.4	\$ 110.00	035-0120
50	25.4	7.0	5.4	\$ 110.00	035-0130
50	50.0	13.0	6.3	\$ 173.00	035-0140
50	50.8	13.0	6.3	\$ 173.00	035-0150
100	15.0	5.0	4.7	\$ 120.00	035-0158
100	25.0	5.0	4.2	\$ 84.00	035-0160
100	25.4	5.0	4.2	\$ 84.00	035-0170
100	50.0	10.0	6.8	\$ 158.00	035-0180
100	50.8	10.0	6.8	\$ 158.00	035-0190
250	15.0	5.0	4.9	\$ 120.00	035-0198
250	25.0	5.0	4.7	\$ 110.00	035-0220
250	25.4	5.0	4.7	\$ 110.00	035-0230
250	50.0	8.0	6.7	\$ 173.00	035-0240
250	50.8	8.0	6.7	\$ 173.00	035-0250
500	15.0	5.0	4.9	\$ 120.00	035-0258
500	25.0	5.0	4.8	\$ 110.00	035-0260
500	25.4	5.0	4.8	\$ 110.00	035-0270
500	50.0	8.0	7.4	\$ 173.00	035-0280
500	50.8	8.0	7.4	\$ 173.00	035-0290
1000	15.0	5.0	5.0	\$ 120.00	035-0298
1000	25.0	5.0	4.9	\$ 110.00	035-0330
1000	25.4	5.0	4.9	\$ 110.00	035-0340
1000	50.0	8.0	7.7	\$ 173.00	035-0350
1000	50.8	8.0	7.7	\$ 173.00	035-0360
2000	15.0	5.0	5.0	\$ 120.00	035-0368
2000	25.0	5.0	5.0	\$ 110.00	035-0390
2000	50.0	8.0	7.8	\$ 173.00	035-0450
4000	15.0	5.0	5.0	\$ 120.00	035-0458
4000	25.0	5.0	5.0	\$ 110.00	035-0490
4000	50.0	8.0	7.9	\$ 173.00	035-0560

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Off-Axis Parabolic Mirrors

- Perfect for collimating point sources
- Spherical and chromatic aberration free
- Aluminum overcoated with MgF_2 for high durability
- Standard diameters from 2.5 to 10.0 inches

Off-axis paraboloids are excellent for collimation of a point source and for collecting of light from a distant source. The focal point is located outside of the collection area so that shadowing is eliminated.

These paraboloids are hand polished from large blanks of fine-annealed low expansion glass. They are finished to an accuracy of $\lambda/10$ and are provided with a measured interferogram. The back surface is ground so that when mounted the mirror normal bisects the angle between the focal axis and the collimated axis.

These mirrors are coated with protected aluminum to provide a reflectance of at least 85% over the visible and near infrared spectrum. (See reflectance curve on next page.) Protected gold coatings are also available upon request for use over the infrared spectrum.



Off-axis parabolic mirrors are classically used to focus distant objects. The focal point is outside of the collection area, so shadowing is eliminated. While the field of view is fairly restricted, within that area the imagery is diffraction limited and free of both chromatic and spherical aberration.

Specifications & Tolerances

Surface tolerance: $\lambda/10$

Surface quality: 60-40

Focal length: $\pm 1\%$ Thickness: $\pm 0.2\text{mm}$

Durability: to MIL-C-675

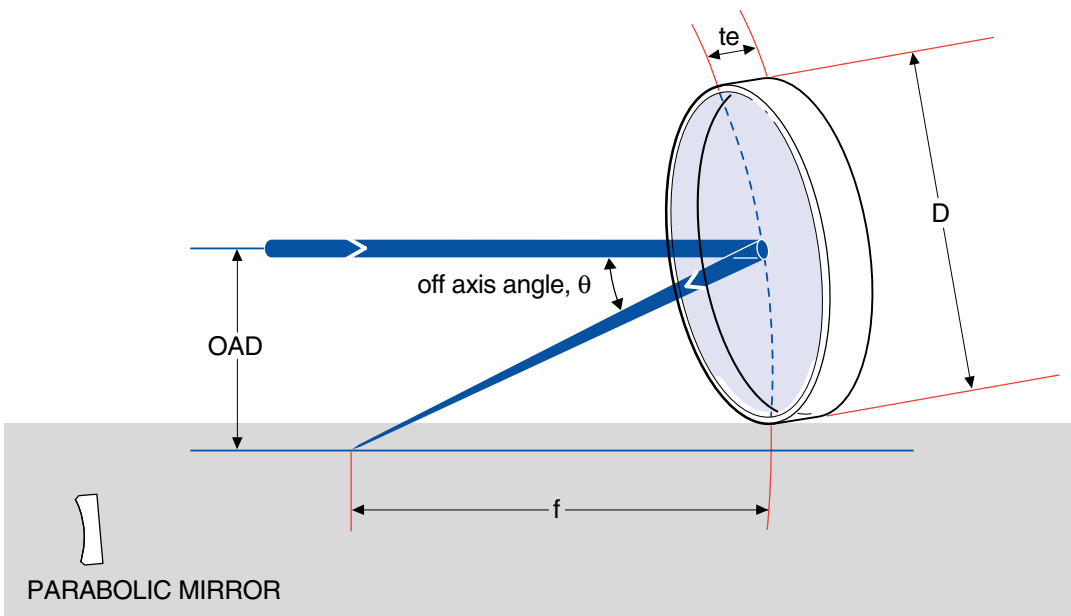
Reflectance: Protected Aluminum $R > 85\%$ (350-1550nm)

Diameter: +0, -0.2mm

Clear aperture: 90% diameter

Material: Low expansion glass

Off-axis distance tolerance: +6, -0mm

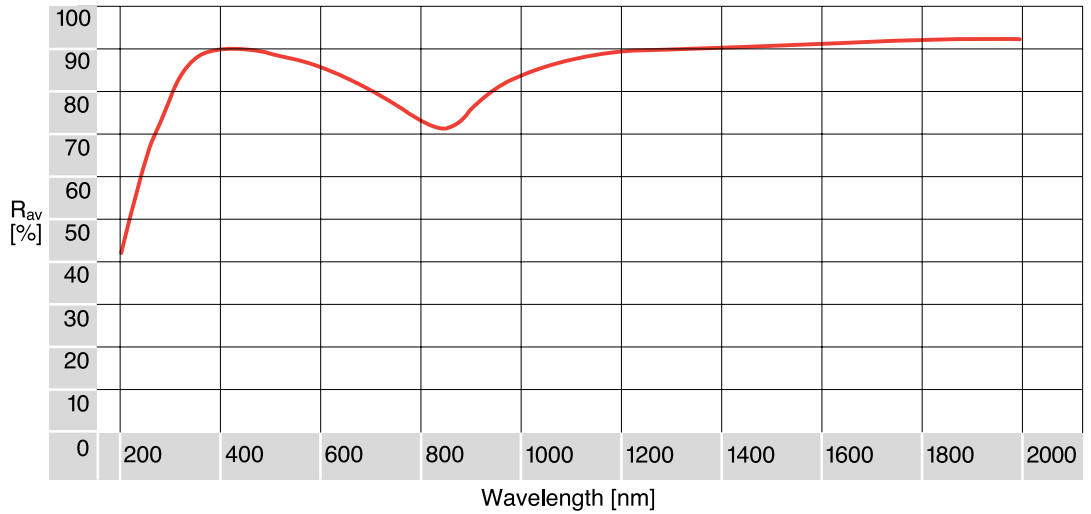


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ALUMINUM COATING REFLECTIVITY

Al + MgF₂ —

Parabolic Mirrors

Focal Length (m)	Diameter, D (inches) (mm)		Thickness, te (mm)	Off-axis distance, OAD (mm)	Off-axis angle, θ (degrees)	Price	PART NUMBER
0.50	2.5	63.5	15.0	60	6.9	PLEASE CALL	037-0110
0.75	3.0	76.2	15.0	80	6.1	PLEASE CALL	037-0120
1.00	2.5	63.5	15.0	60	3.4	PLEASE CALL	037-0130
1.00	4.0	101.6	17.0	110	6.3	PLEASE CALL	037-0140
1.25	3.0	76.2	15.0	80	3.7	PLEASE CALL	037-0150
1.25	5.0	127.0	20.0	100	4.6	PLEASE CALL	037-0160
1.50	6.0	152.4	25.0	100	3.8	PLEASE CALL	037-0170
2.00	4.0	101.6	17.0	110	3.2	PLEASE CALL	037-0180
2.00	5.0	127.0	20.0	100	2.9	PLEASE CALL	037-0190
2.00	8.0	203.2	33.0	150	4.3	PLEASE CALL	037-0220
2.50	10.0	254.0	45.0	175	4.0	PLEASE CALL	037-0230
3.00	6.0	152.4	25.0	100	1.9	PLEASE CALL	037-0240
4.00	8.0	203.2	33.0	150	2.2	PLEASE CALL	037-0250
5.00	10.0	254.0	42.0	175	2.0	PLEASE CALL	037-0260

A wide variety of sizes can be supplied but these popular items are offered as standard. Please call with your requirements even if you do not see the exact paraboloid you need.

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