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Nd:YAG LASER CRYSTALS

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OPTICAL COMPONENTS CLEANING INSTRUCTIONS

See page A.4

Nd:YAG Laser Optics

LASER MIRRORS

Our Nd:YAG laser mirrors are suitable for fundamental Nd:YAG laser 1064 nm, frequency-doubled 532 nm, frequency-tripled 355 nm and frequency quadrupled 266 nm wavelength application. Two kinds of substrate material are available. Laser line mirrors are designed for 45°

angle of incidence. Featuring high polishing quality, low scattering and high damage threshold, our dielectric reflectors enables perfect beam steering for Nd:YAG lasers.

SUBSTRATE

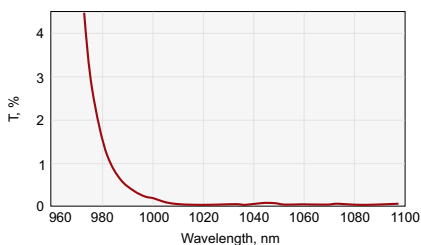
Material	UV grade Fused Silica or BK7 glass
S1 Surface Flatness	$\lambda/10$ at 633 nm
S1 Surface Quality	20–10 scratch & dig (MIL-PRF-13830B)
S2 Surface Quality	Commercial polish
Diameter Tolerance	+0.00 mm -0.12 mm
Thickness Tolerance	± 0.25 mm
Wedge	< 3 min
Chamfer	0.3 mm at 45° typical

COATING

Technology	Electron beam multilayer dielectric or Ion Beam Sputtering
Adhesion and Durability	Per MIL-C-675A. Insoluble in lab solvents
Clear Aperture	Exceeds central 85% of diameter
Damage Threshold:	
BK7 laser line mirrors	5 J/cm ² , 8 nsec pulse, 1064 nm typical
UV FS laser line mirrors	8 J/cm ² , 8 nsec pulse, 1064 nm typical
BK7 dual line mirrors	1 J/cm ² , 8 nsec pulse, 1064 nm typical
UV FS dual line mirrors	2 J/cm ² , 8 nsec pulse, 1064 nm typical
Coated Surface Flatness	$\lambda/10$ at 633 nm over clear aperture
Angle of Incidence	0 or 45°

LASER LINE MIRRORS

Substrate material: **BK7 grade A**

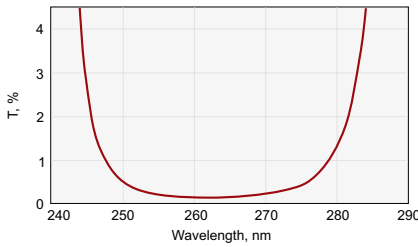


HR 1064 nm, AOI = 45°

Wavelength, nm	AOI=0°			AOI=45°		
	R, % (s+p)/2	Catalogue number	Price, EUR	R, % (s+p)/2	Catalogue number	Price, EUR
SIZE – Ø12.7 × 3 mm						
351–361	99.7	031-0350-i0	59	99.5	031-0350	59
527–532	99.7	031-0530-i0	56	99.5	031-0530	56
1047–1064	99.7	031-1060-i0	57	99.5	031-1060	57
SIZE – Ø12.7 × 6 mm						
351–361	99.7	031-0350T6-i0	59	99.5	031-0350T6	59
527–532	99.7	031-0530T6-i0	56	99.5	031-0530T6	56
1047–1064	99.7	031-1060T6-i0	57	99.5	031-1060T6	57
SIZE – Ø25.4 × 6 mm						
351–361	99.7	032-0350-i0	90	99.5	032-0350	90
527–532	99.7	032-0530-i0	74	99.5	032-0530	74
1047–1064	99.7	032-1060-i0	75	99.5	032-1060	75
SIZE – Ø50.8 × 8 mm						
351–361	99.7	035-0350-i0	128	99.5	035-0350	128
527–532	99.7	035-0530-i0	110	99.5	035-0530	110
1047–1064	99.7	035-1060-i0	110	99.5	035-1060	110
SIZE – Ø76.2 × 12.7 mm						
527–532	99.7	037-0530-i0	185	99.5	037-0530	185
1047–1064	99.7	037-1060-i0	185	99.5	037-1060	185

LASER LINE MIRRORS

Substrate material: **UV grade Fused Silica**



HR 266 nm, AOI = 45°

Wavelength, nm	AOI=0°			AOI=45°		
	R, % (s+p)/2	Catalogue number	Price, EUR	R, % (s+p)/2	Catalogue number	Price, EUR

SIZE – Ø12.7 × 3 mm

262–266	99	041-0260-i0	71	99	041-0260	71
351–361	99.7	041-0350-i0	67	99.5	041-0350	67
527–532	99.7	041-0530-i0	62	99.5	041-0530	62
1047–1064	99.7	041-1060-i0	62	99.5	041-1060	62

SIZE – Ø12.7 × 6 mm

262–266	99	041-0260T6-i0	71	99	041-0260T6	71
351–361	99.7	041-0350T6-i0	67	99.5	041-0350T6	67
	99.9	041-0350T6HHR-i0	110	99.9	041-0350T6HHR	110
527–532	99.7	041-0530T6-i0	62	99.5	041-0530T6	62
	99.9	041-0530T6HHR-i0	75	99.9	041-0530T6HHR	75
1047–1064	99.7	041-1060T6-i0	62	99.5	041-1060T6	62
	99.9	041-1060T6HHR-i0	75	99.9	041-1060T6HHR	75

SIZE – Ø25.4 × 6 mm

262–266	99	042-0260-i0	99	99	042-0260	99
351–361	99.7	042-0350-i0	95	99.5	042-0350	95
	99.9	042-0350HHR-i0	130	99.9	042-0350HHR	130
527–532	99.7	042-0530-i0	90	99.5	042-0530	90
	99.9	042-0530HHR-i0	105	99.9	042-0530HHR	105
1047–1064	99.7	042-1060-i0	90	99.5	042-1060	90
	99.9	042-1060HHR-i0	105	99.9	042-1060HHR	105

SIZE – Ø50.8 × 8 mm

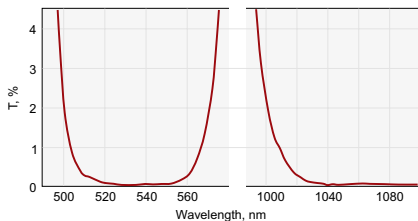
262–266	99	045-0260-i0	207	99	045-0260	207
351–361	99.7	045-0350-i0	187	99.5	045-0350	187
527–532	99.7	045-0530-i0	169	99.5	045-0530	169
1047–1064	99.7	045-1060-i0	169	99.5	045-1060	169

SIZE – Ø76.2 × 12.7 mm

351–361	99.7	047-0350-i0	281	99.5	047-0350	281
527–532	99.7	047-0530-i0	258	99.5	047-0530	258
1047–1064	99.7	047-1060-i0	258	99.5	047-1060	258

DUAL BAND MIRRORS

Substrate material: **BK7 grade A**



HR 532+1064 nm, AOI = 45°

Wavelength, nm	AOI=0°			AOI=45°		
	R, % (s+p)/2	Catalogue number	Price, EUR	R, % (s+p)/2	Catalogue number	Price, EUR

SIZE – Ø12.7 × 3 mm

532+1064	99.7	051-5306-i0	85	99.5	051-5306	85
633+1064	99.7	051-6306-i0	85	99.5	051-6306	85

SIZE – Ø12.7 × 6 mm

532+1064	99.7	051-5306T6-i0	85	99.5	051-5306T6	85
633+1064	99.7	051-6306T6-i0	85	99.5	051-6306T6	85

SIZE – Ø25.4 × 6 mm

532+1064	99.7	052-5306-i0	103	99.5	052-5306	103
633+1064	99.7	052-6306-i0	103	99.5	052-6306	103

SIZE – Ø50.8 × 8 mm

532+1064	99.7	055-5306-i0	151	99.5	055-5306	151
633+1064	99.7	055-6306-i0	151	99.5	055-6306	151

SIZE – Ø76.2 × 12.7 mm

532+1064	99.7	057-5306-i0	227	99.5	057-5306	227
633+1064	99.7	057-6306-i0	227	99.5	057-6306	227

RELATED PRODUCTS

Prisms *See page 1.51*

Kinematic Mirror/Beamsplitter Mounts 840-0056

Find more at EksmaOptics.com



DUAL BAND MIRRORS

Substrate material: **UV grade Fused Silica**

Wavelength, nm	AOI=0°			AOI=45°		
	R, % (s+p)/2	Catalogue number	Price, EUR	R, % (s+p)/2	Catalogue number	Price, EUR
SIZE – Ø12.7 × 3 mm						
532+1064	99.7	061-5306-i0	109	99.5	061-5306	109
633+1064	99.7	061-6306-i0	109	99.5	061-6306	109
355+532	99.7	061-3553-i0	115	99.5	061-3553	115
SIZE – Ø12.7 × 6 mm						
532+1064	99.7	061-5306T6-i0	109	99.5	061-5306T6	109
633+1064	99.7	061-6306T6-i0	109	99.5	061-6306T6	109
355+532	99.7	061-3553T6-i0	115	99.5	061-3553T6	115
SIZE – Ø25.4 × 6 mm						
532+1064	99.7	062-5306-i0	134	99.5	062-5306	134
	99.9	062-5306HHR-i0	180	99.9	062-5306HHR	180
633+1064	99.7	062-6306-i0	134	99.5	062-6306	134
355+532	99.7	062-3553-i0	139	99.5	062-3553	139
SIZE – Ø50.8 × 8 mm						
532+1064	99.7	065-5306-i0	209	99.5	065-5306	209
633+1064	99.7	065-6306-i0	209	99.5	065-6306	209
355+532	99.7	065-3553-i0	215	99.5	065-3553	215
SIZE – Ø76.2 × 12.7 mm						
532+1064	99.7	067-5306-i0	318	99.5	067-5306	318
633+1064	99.7	067-6306-i0	318	99.5	067-6306	318
355+532	99.7	067-3553-i0	323	99.5	067-3553	323

RELATED PRODUCTS

Laser Line and Dual Laser Line Mirrors of other wavelengths

See page 1.18



Metal Coated Mirrors See page 1.26

LASER HARMONIC SEPARATORS

FEATURES

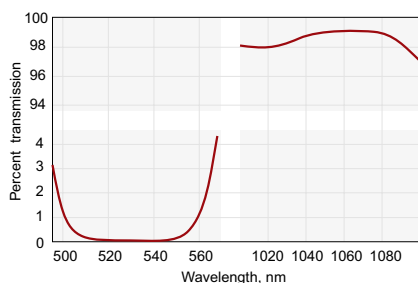
- Offered on Ø 0.5 or 1 inch substrates of BK7 or UV FS with surface flatness $\lambda/10$

Harmonic separators are dichroic beamsplitters that reflect one wavelength and transmit the others. Reflectance is higher than 99.5% for the wavelength of interest and transmittance is at least 90% for the rejected wavelengths. The rear surface of harmonic separators is antireflection coated.

SUBSTRATE

Material	UV grade Fused Silica or BK7 glass
S1 Surface Flatness	$\lambda/10$ typical at 633 nm
S1 Surface Quality	20–10 scratch & dig (MIL-PRF-13830B)
S2 Surface Flatness	$\lambda/10$ typical at 633 nm
S2 Surface Quality	20–10 scratch & dig (MIL-PRF-13830B)
Diameter Tolerance	+0.00 mm -0.12 mm
Thickness Tolerance	± 0.25 mm
Parallelism	< 30 arcsec
Chamfer	0.3 mm at 45° typical

LASER HARMONIC SEPARATORS WITH HIGH TRANSMISSION



041-5105HT.
 HR > 99.9% @ 532 nm,
 HT > 99% @ 1064 nm, AOI = 45°

COATING

Technology	Ion Beam Sputtering (IBS)
Damage Threshold	>10 J/cm ² , 8 nsec pulse, 1064 nm typical
Back side anti-reflection coated	AOI 45°, R<0.25% AOI 0°, R<0.2%

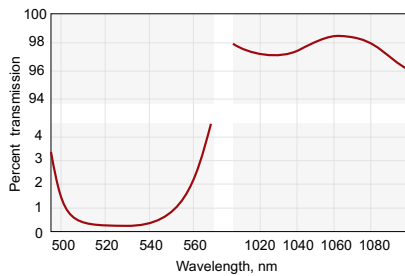
Reflected wavelength, nm R > 99.9%	Transmitted wavelength, nm R > 99%	AOI, deg	Substrate material	Ø12.7×3 mm		Ø25.4×6 mm	
				Catalogue number	Price, EUR	Catalogue number	Price, EUR
532	1064	0	UVFS	041-5100HT	160	042-5100HT	205
532	1064	45	UVFS	041-5105HT	160	042-5105HT	205
1064	532	0	UVFS	041-6500HT	165	042-6500HT	210
1064	532	45	UVFS	041-6505HT	165	042-6505HT	210

STANDARD LASER HARMONIC SEPARATORS

COATING

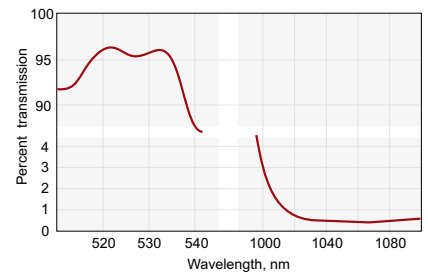
Technology	Electron beam multilayer dielectric
Adhesion and Durability	Per MIL-C-675A. Insoluble in lab solvents
Clear Aperture	Exceeds central 85% of diameter
Damage Threshold:	
BK7	>2 J/cm ² , 8 nsec pulse, 1064 nm typical
UV FS	>5 J/cm ² , 8 nsec pulse, 1064 nm typical
Coated Surface Flatness	$\lambda/10$ at 633 nm over clear aperture
Back side antireflection coated	AOI 45°, R<0.5% AOI 0°, R<0.1%

Reflected wavelength, nm, R > 99.5%	Transmitted wavelength, nm	Transmission, %	AOI, deg	Substrate material	Ø12.7x3 mm		Ø25.4x6 mm	
					Catalogue number	Price, EUR	Catalogue number	Price, EUR
266	355+532+1064	>90	0	UVFS	041-2310	155	042-2310	185
266	355+532+1064	>90	45	UVFS	041-2315	155	042-2315	185
266	532	>95	0	UVFS	041-2500	135	042-2500	165
266	532	>95	45	UVFS	041-2505	135	042-2505	165
355	1064	>95	0	UVFS	041-3100	115	042-3100	145
355	1064	>95	45	UVFS	041-3105	115	042-3105	145
355	532	>95	0	UVFS	041-3500	115	042-3500	145
355	532	>95	45	UVFS	041-3505	115	042-3505	145
355	532+1064	>95	0	UVFS	041-3510	125	042-3510	155
355	532+1064	>95	45	UVFS	041-3515	125	042-3515	155
532	1064	>95	0	BK7	031-5100	90	032-5100	115
532	1064	>95	45	BK7	031-5105	90	032-5105	115
532	1064	>95	0	UVFS	041-5100	115	042-5100	145
532	1064	>95	45	UVFS	041-5105	115	042-5105	145
532+1064	355	>85	0	UVFS	041-5140	205	042-5140	230
532+1064	355	>85	45	UVFS	041-5145	205	042-5145	230
1064	532	>93	0	BK7	031-6500	95	032-6500	120
1064	532	>93	45	BK7	031-6505	95	032-6505	120
1064	532	>93	0	UVFS	041-6500	120	042-6500	150
1064	532	>93	45	UVFS	041-6505	120	042-6505	150



031-5105.

HR > 99.5% @ 532 nm, HT > 95% @ 1064 nm, AOI = 45°



031-6500.

HR > 99.5% @ 1064 nm, HT > 93% @ 532 nm, AOI = 0°

RELATED PRODUCTS

Pellin-Broca Prisms
See page 1.53

HOUSING ACCESSORIES

Adapter for Beamsplitter
at 45° 840-0116
Find more at EksmaOptics.com



Kinematic Mirror and
Beamsplitter Mount 840-0020
Find more at EksmaOptics.com



LASER OUTPUT COUPLERS

An output coupler is a partially reflecting dielectric mirror used in a laser cavity. It transmits a part of the circulating intracavity power for generating a useful output from the laser.

A low transmission output coupler leads to a low laser threshold, but also possibly to poor laser efficiency if the losses due to output coupling do not dominate over other parasitic losses in the laser cavity. The output coupler transmission is often chosen to maximize the achieved output power, although its optimum value may be lower or higher if there are other design purposes (minimizing the intracavity intensities or suppressing Q-switching instabilities in a passively mode-locked laser).

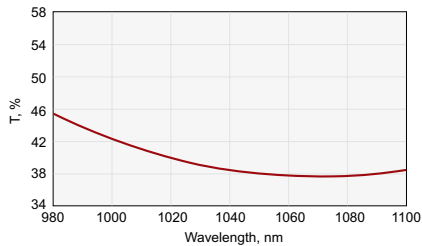
SUBSTRATE

Material	UV grade Fused Silica or BK7 glass
S1 Surface Flatness	$\lambda/10$ typical at 633 nm
S1 Surface Quality	20–10 scratch & dig (MIL-PRF-13830B)
S2 Surface Flatness	$\lambda/10$ typical at 633 nm
S2 Surface Quality	20–10 scratch & dig (MIL-PRF-13830B)
Diameter Tolerance	+0.00 mm; -0.12 mm
Thickness Tolerance	± 0.25 mm
Parallelism	30 arcsec
Chamfer	0.3 mm at 45° typical

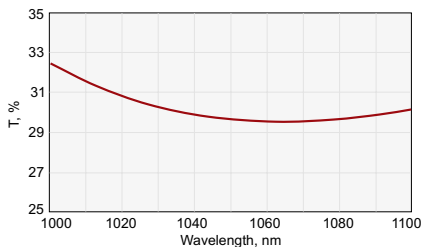
COATING

Technology	Electron beam multilayer dielectric
Adhesion and Durability	Per MIL-C-675A. Insoluble in lab solvents
Clear Aperture	Exceeds central 85% of diameter
Damage Threshold:	
BK7	>3 J/cm ² , 8 nsec pulse, 1064 nm typical
UV FS	>6 J/cm ² , 8 nsec pulse, 1064 nm typical
Coated Surface Flatness	$\lambda/10$ at 633 nm over clear aperture
Angle of Incidence	0 – 8° (normal)
Back side antireflection coated	R < 0.2%

LASER OUTPUT COUPLERS



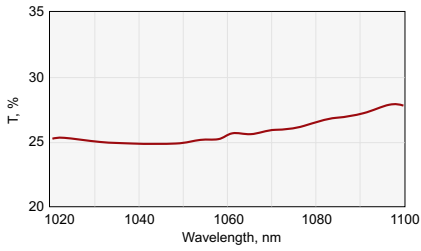
$$R = 60 \pm 2\% \text{ @ } 1064 \text{ nm, AOI} = 0^\circ$$



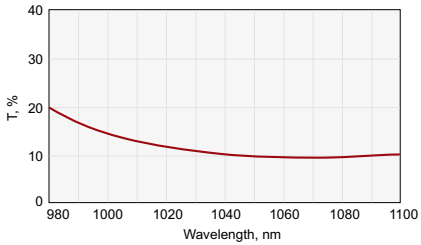
$$R = 70 \pm 2\% \text{ @ } 1064 \text{ nm, AOI} = 0^\circ$$

SIZE – $\varnothing 12.7 \times 3$ mm

Wavelength, nm	Reflection, %	Transmission, %	Substrate material	Catalogue number	Price, EUR
1064	15±3	85±3	BK7	031-0015	75
1064	20±3	80±3	BK7	031-0020	75
1064	25±3	75±3	BK7	031-0025	75
1064	30±3	70±3	BK7	031-0030	75
1064	40±3	60±3	BK7	031-0040	75
1064	50±3	50±3	BK7	031-0050	75
1064	60±3	40±3	BK7	031-0060	75
1064	65±3	35±3	BK7	031-0065	75
1064	70±3	30±3	BK7	031-0070	75
1064	75±3	25±3	BK7	031-0075	75
1064	80±3	20±3	BK7	031-0080	75
1064	85±3	15±3	BK7	031-0085	75
1064	90±2	10±2	BK7	031-0090	82
1064	95±2	5±2	BK7	031-0095	82
1064	97±1	3±1	BK7	031-0097	89
1064	98±1	2±1	BK7	031-0098	89
1064	99.0±0.5	1.0±0.5	BK7	031-0099	96
1064	20±3	80±3	UV FS	041-0020	95
1064	30±3	70±3	UV FS	041-0030	95
1064	40±3	60±3	UV FS	041-0040	95
1064	50±3	50±3	UV FS	041-0050	95
1064	60±3	40±3	UV FS	041-0060	95
1064	65±3	35±3	UV FS	041-0065	95
1064	70±3	30±3	UV FS	041-0070	95
1064	75±3	25±3	UV FS	041-0075	95
1064	80±3	20±3	UV FS	041-0080	95
1064	85±3	15±3	UV FS	041-0085	95
1064	90±2	10±2	UV FS	041-0090	102
1064	95±2	5±2	UV FS	041-0095	102
1064	97±1	3±1	UV FS	041-0097	109
1064	98±1	2±1	UV FS	041-0098	109
1064	99.0±0.5	1.0±0.5	UV FS	041-0099	116



$R = 75 \pm 3\% @ 1064 \text{ nm}, AOI = 0^\circ$



$R = 90 \pm 2\% @ 1064 \text{ nm}, AOI = 0^\circ$

SIZE – Ø25.4 × 6 mm

Wavelength, nm	Reflection, %	Transmission, %	Substrate material	Catalogue number	Price, EUR
1064	15±3	85±3	BK7	032-0015	95
1064	20±3	80±3	BK7	032-0020	95
1064	25±3	75±3	BK7	032-0025	95
1064	30±3	70±3	BK7	032-0030	95
1064	40±3	60±3	BK7	032-0040	95
1064	50±3	50±3	BK7	032-0050	95
1064	60±3	40±3	BK7	032-0060	95
1064	65±3	35±3	BK7	032-0065	95
1064	70±3	30±3	BK7	032-0070	95
1064	75±3	25±3	BK7	032-0075	95
1064	80±3	20±3	BK7	032-0080	95
1064	85±3	15±3	BK7	032-0085	95
1064	90±2	10±2	BK7	032-0090	102
1064	95±2	5±2	BK7	032-0095	102
1064	97±1	3±1	BK7	032-0097	109
1064	98±1	2±1	BK7	032-0098	109
1064	99.0±0.5	1.0±0.5	BK7	032-0099	116
1064	15±3	85±3	UV FS	042-0015	115
1064	20±3	80±3	UV FS	042-0020	115
1064	25±3	75±3	UV FS	042-0025	115
1064	30±3	70±3	UV FS	042-0030	115
1064	40±3	60±3	UV FS	042-0040	115
1064	50±3	50±3	UV FS	042-0050	115
1064	60±3	40±3	UV FS	042-0060	115
1064	65±3	35±3	UV FS	042-0065	115
1064	70±3	30±3	UV FS	042-0070	115
1064	75±3	25±3	UV FS	042-0075	115
1064	80±3	20±3	UV FS	042-0080	115
1064	85±3	15±3	UV FS	042-0085	115
1064	90±2	10±2	UV FS	042-0090	122
1064	95±2	5±2	UV FS	042-0095	122
1064	97±1	3±1	UV FS	042-0097	129
1064	98±1	2±1	UV FS	042-0098	129
1064	99.0±0.5	1.0±0.5	UV FS	042-0099	136

RELATED PRODUCTS

Uncoated Flat Windows *See page 1.10*

Kinematic Mirror and
Beamsplitter Mount
840-0020

Find more at EksmaOptics.com



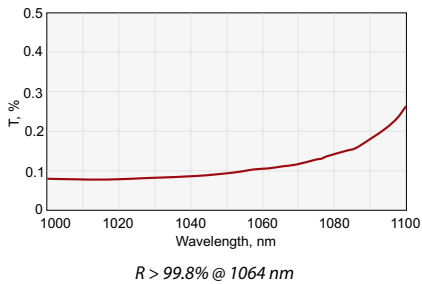
LASER REAR MIRRORS

SUBSTRATE

Material	UV grade Fused Silica or BK7 glass
S1 Surface Flatness	$\lambda/10$ at 633 nm
S1 Surface Quality	20–10 scratch & dig (MIL-PRF-13830B)
S2 Surface Quality	Commercial polish
Diameter Tolerance	+0.00 mm; -0.12 mm
Thickness Tolerance	± 0.25
Chamfer	0.3 mm at 45° typical

COATING

Technology	Electron beam multilayer dielectric
Adhesion and Durability	Per MIL-C-675A. Insoluble in lab solvents
Clear Aperture	Exceeds central 85% of diameter
Damage Threshold:	
BK7	$>2 \text{ J/cm}^2$, 8 nsec pulse, 1064 nm
UV FS	$>5 \text{ J/cm}^2$, 8 nsec pulse, 1064 nm
Angle of Incidence	0 – 8° (normal)
Reflectivity	R > 99.7%



SIZE – $\varnothing 25.4 \times 6 \text{ mm}$

Wavelength, nm	Substrate type	Radius, mm	Substrate material	Catalogue number	Price, EUR
1047–1064	Plano	∞	BK7	032-1060-i0	75
1064	Plano-concave	-50	BK7	032-8005	89
1064	Plano-concave	-100	BK7	032-8010	89
1064	Plano-concave	-150	BK7	032-8015	89
1064	Plano-concave	-200	BK7	032-8020	89
1064	Plano-concave	-250	BK7	032-8025	89
1064	Plano-concave	-500	BK7	032-8050	89
1064	Plano-concave	-1000	BK7	032-8100	89
1064	Plano-concave	-2000	BK7	032-8200	89
1064	Plano-concave	-2500	BK7	032-8250	89
1064	Plano-concave	-4000	BK7	032-8400	89
1064	Plano-concave	-5000	BK7	032-8500	89
1047–1064	Plano	∞	UV FS	042-1060-i0	90
1064	Plano-concave	-50	UV FS	042-8005	109
1064	Plano-concave	-100	UV FS	042-8010	109
1064	Plano-concave	-150	UV FS	042-8015	109
1064	Plano-concave	-200	UV FS	042-8020	109
1064	Plano-concave	-250	UV FS	042-8025	109
1064	Plano-concave	-500	UV FS	042-8050	109
1064	Plano-concave	-1000	UV FS	042-8100	109
1064	Plano-concave	-2000	UV FS	042-8200	109
1064	Plano-concave	-2500	UV FS	042-8250	109
1064	Plano-concave	-4000	UV FS	042-8400	109
1064	Plano-concave	-5000	UV FS	042-8500	109
1064	Plano-convex	+100	BK7	032-9010	93
1064	Plano-convex	+200	BK7	032-9020	93
1064	Plano-convex	+300	BK7	032-9030	93
1064	Plano-convex	+500	BK7	032-9050	93
1064	Plano-convex	+1000	BK7	032-9100	93
1064	Plano-convex	+2000	BK7	032-9200	93
1064	Plano-convex	+3000	BK7	032-9300	93
1064	Plano-convex	+4000	BK7	032-9400	93
1064	Plano-convex	+100	UV FS	042-9010	113
1064	Plano-convex	+200	UV FS	042-9020	113
1064	Plano-convex	+300	UV FS	042-9030	113
1064	Plano-convex	+500	UV FS	042-9050	113
1064	Plano-convex	+1000	UV FS	042-9100	113
1064	Plano-convex	+2000	UV FS	042-9200	113
1064	Plano-convex	+3000	UV FS	042-9300	113
1064	Plano-convex	+4000	UV FS	042-9400	113

RELATED PRODUCTS

Uncoated Curved Windows *See page 1.8*

Kinematic Mirror Mount 840-0010

Find more at EksmaOptics.com

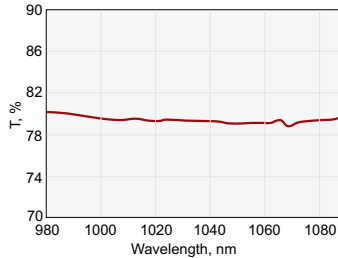


LASER BEAMSPLITTERS

FEATURES

› Designed for average polarization: $R=(R_s+R_p)/2$ and $T=(T_s+T_p)/2$

Beamsplitter splits average polarized laser beam into two beams separated by 90° from each other.



042-7120A.

$R = 20 \pm 3\%$, $T = 80 \pm 3\%$ @ 1064 nm

SUBSTRATE

Material	UV grade Fused Silica or BK7 glass
S1 Surface Flatness	$\lambda/10$ typical at 633 nm
S1 Surface Quality	20–10 scratch & dig (MIL-PRF-13830B)
S2 Surface Flatness	$\lambda/10$ typical at 633 nm
S2 Surface Quality	20–10 scratch & dig (MIL-PRF-13830B)
Diameter Tolerance	+0.00 mm; -0.12 mm
Thickness Tolerance	± 0.25 mm
Parallelism	30 arcsec
Chamfer	0.3 mm at 45° typical

COATING

Technology	Electron beam multilayer dielectric
Adhesion and Durability	Per MIL-C-675A. Insoluble in lab solvents
Clear Aperture	Exceeds central 85% of diameter
Damage Threshold:	
BK7	>5 J/cm ² , 8 nsec pulse, 1064 nm typical
UV FS	>8 J/cm ² , 8 nsec pulse, 1064 nm typical
Angle of Incidence	45±3 degrees
Back side antireflection coated	R < 0.5%

DESIGNED FOR AVERAGE POLARIZATION: $R=(R_s+R_p)/2$ and $T=(T_s+T_p)/2$

Wavelength, nm	Reflection, %	Transmission, %	Substrate material	Ø12.7x3 mm		Ø25.4x6 mm	
				Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	20±3	80±3	BK7	031-7120A	75	032-7120A	95
1064	30±3	70±3	BK7	031-7130A	75	032-7130A	95
1064	50±3	50±3	BK7	031-7150A	75	032-7150A	95
1064	70±3	30±3	BK7	031-7170A	75	032-7170A	95
1064	75±3	25±3	BK7	031-7175A	75	032-7175A	95
1064	80±3	20±3	BK7	031-7180A	75	032-7180A	95
1064	90±3	10±3	BK7	031-7190A	75	032-7190A	95
532	20±3	80±3	BK7	031-7220A	73	032-7220A	93
532	30±3	70±3	BK7	031-7230A	73	032-7230A	93
532	50±3	50±3	BK7	031-7250A	73	032-7250A	93
532	70±3	30±3	BK7	031-7270A	73	032-7270A	93
532	80±3	20±3	BK7	031-7280A	73	032-7280A	93
1064	20±3	80±3	UV FS	041-7120A	95	042-7120A	115
1064	30±3	70±3	UV FS	041-7130A	95	042-7130A	115
1064	50±3	50±3	UV FS	041-7150A	95	042-7150A	115
1064	70±3	30±3	UV FS	041-7170A	95	042-7170A	115
1064	75±3	25±3	UV FS	041-7175A	95	042-7175A	115
1064	80±3	20±3	UV FS	041-7180A	95	042-7180A	115
1064	90±3	10±3	UV FS	041-7190A	95	042-7190A	115
532	20±3	80±3	UV FS	041-7220A	93	042-7220A	113
532	30±3	70±3	UV FS	041-7230A	93	042-7230A	113
532	50±3	50±3	UV FS	041-7250A	93	042-7250A	113
532	70±3	30±3	UV FS	041-7270A	93	042-7270A	113
532	80±3	20±3	UV FS	041-7280A	93	042-7280A	113
355	20±3	80±3	UV FS	041-7320A	105	042-7320A	135
355	30±3	70±3	UV FS	041-7330A	105	042-7330A	135
355	50±3	50±3	UV FS	041-7350A	105	042-7350A	135
355	70±3	30±3	UV FS	041-7370A	105	042-7370A	135
355	80±3	20±3	UV FS	041-7380A	105	042-7380A	135
266	20±3	80±3	UV FS	041-7920A	115	042-7920A	145
266	30±3	70±3	UV FS	041-7930A	115	042-7930A	145
266	50±3	50±3	UV FS	041-7950A	115	042-7950A	145
266	70±3	30±3	UV FS	041-7970A	115	042-7970A	145
266	80±3	20±3	UV FS	041-7980A	115	042-7980A	145

RELATED PRODUCTS

Uncoated Flat Windows

See page 1.10

DESIGNED FOR S- POLARIZATION

Wavelength, nm	Reflection, %	Transmission, %	Substrate material	Ø12.7x3 mm		Ø25.4x6 mm	
				Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	20±3	80±3	BK7	031-7120S	75	032-7120S	95
1064	30±3	70±3	BK7	031-7130S	75	032-7130S	95
1064	50±3	50±3	BK7	031-7150S	75	032-7150S	95
1064	70±3	30±3	BK7	031-7170S	75	032-7170S	95
1064	80±3	20±3	BK7	031-7180S	75	032-7180S	95
532	20±3	80±3	BK7	031-7220S	73	032-7220S	93
532	30±3	70±3	BK7	031-7230S	73	032-7230S	93
532	50±3	50±3	BK7	031-7250S	73	032-7250S	93
532	70±3	30±3	BK7	031-7270S	73	032-7270S	93
532	80±3	20±3	BK7	031-7280S	73	032-7280S	93
1064	20±3	80±3	UV FS	041-7120S	95	042-7120S	115
1064	30±3	70±3	UV FS	041-7130S	95	042-7130S	115
1064	50±3	50±3	UV FS	041-7150S	95	042-7150S	115
1064	70±3	30±3	UV FS	041-7170S	95	042-7170S	115
1064	80±3	20±3	UV FS	041-7180S	95	042-7180S	115
532	20±3	80±3	UV FS	041-7220S	93	042-7220S	113
532	30±3	70±3	UV FS	041-7230S	93	042-7230S	113
532	50±3	50±3	UV FS	041-7250S	93	042-7250S	113
532	70±3	30±3	UV FS	041-7270S	93	042-7270S	113
532	80±3	20±3	UV FS	041-7280S	93	042-7280S	113
355	20±3	80±3	UV FS	041-7320S	105	042-7320S	135
355	30±3	70±3	UV FS	041-7330S	105	042-7330S	135
355	50±3	50±3	UV FS	041-7350S	105	042-7350S	135
355	70±3	30±3	UV FS	041-7370S	105	042-7370S	135
355	80±3	20±3	UV FS	041-7380S	105	042-7380S	135
266	20±3	80±3	UV FS	041-7920S	115	042-7920S	145
266	30±3	70±3	UV FS	041-7930S	115	042-7930S	145
266	50±3	50±3	UV FS	041-7950S	115	042-7950S	145
266	70±3	30±3	UV FS	041-7970S	115	042-7970S	145
266	80±3	20±3	UV FS	041-7980S	115	042-7980S	145

HOUSING ACCESSORIES

Kinematic Mirror and Beamsplitter Mount
840-0030-02



Adapter for Beamsplitter at 45° 840-0116



Flipping Mirror/ Beamsplitter Mount 840-0155



Find more at EksmaOptics.com

DESIGNED FOR P- POLARIZATION

Wavelength, nm	Reflection, %	Transmission, %	Substrate material	Ø12.7x3 mm		Ø25.4x6 mm	
				Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	20±3	80±3	BK7	031-7120P	75	032-7120P	95
1064	30±3	70±3	BK7	031-7130P	75	032-7130P	95
1064	50±3	50±3	BK7	031-7150P	75	032-7150P	95
1064	70±3	30±3	BK7	031-7170P	75	032-7170P	95
1064	80±3	20±3	BK7	031-7180P	75	032-7180P	95
532	20±3	80±3	BK7	031-7220P	73	032-7220P	93
532	30±3	70±3	BK7	031-7230P	73	032-7230P	93
532	50±3	50±3	BK7	031-7250P	73	032-7250P	93
532	70±3	30±3	BK7	031-7270P	73	032-7270P	93
532	80±3	20±3	BK7	031-7280P	73	032-7280P	93
1064	20±3	80±3	UV FS	041-7120P	95	042-7120P	115
1064	30±3	70±3	UV FS	041-7130P	95	042-7130P	115
1064	50±3	50±3	UV FS	041-7150P	95	042-7150P	115
1064	70±3	30±3	UV FS	041-7170P	95	042-7170P	115
1064	80±3	20±3	UV FS	041-7180P	95	042-7180P	115
532	20±3	80±3	UV FS	041-7220P	93	042-7220P	113
532	30±3	70±3	UV FS	041-7230P	93	042-7230P	113
532	50±3	50±3	UV FS	041-7250P	93	042-7250P	113
532	70±3	30±3	UV FS	041-7270P	93	042-7270P	113
532	80±3	20±3	UV FS	041-7280P	93	042-7280P	113
355	20±3	80±3	UV FS	041-7320P	105	042-7320P	135
355	30±3	70±3	UV FS	041-7330P	105	042-7330P	135
355	50±3	50±3	UV FS	041-7350P	105	042-7350P	135
355	70±3	30±3	UV FS	041-7370P	105	042-7370P	135
355	80±3	20±3	UV FS	041-7380P	105	042-7380P	135
266	20±3	80±3	UV FS	041-7920P	115	042-7920P	145
266	30±3	70±3	UV FS	041-7930P	115	042-7930P	145
266	50±3	50±3	UV FS	041-7950P	115	042-7950P	145
266	70±3	30±3	UV FS	041-7970P	115	042-7970P	145
266	80±3	20±3	UV FS	041-7980P	115	042-7980P	145

LASER LINE ANTI-REFLECTION COATED PRECISION WINDOWS

FEATURES

- Made of premium quality UV FS and BK7
- AR coated at 266 nm, 355 nm, 532 nm, 1064 nm

Precision windows are mostly used in laser systems. High quality AR multilayer coatings are applied on windows for fundamental Nd:YAG laser 1064 nm, frequency-doubled 532 nm, frequency-tripled 355 nm and

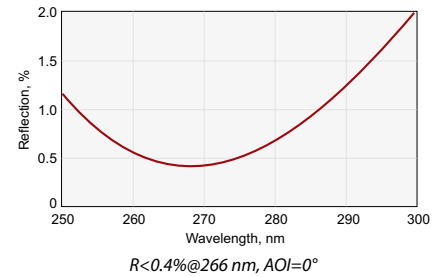
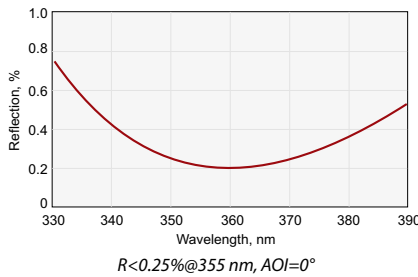
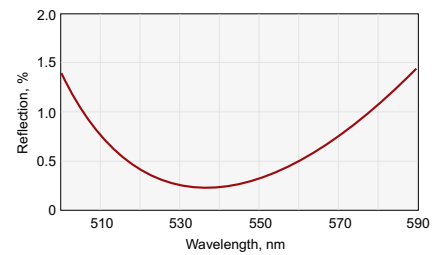
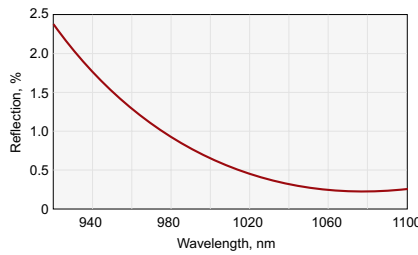
frequency-quadrupled 266 nm applications. Featuring high optical transmission with little distortion of the transmitted signal, precision windows are a good solution for applications that require protective windows.

SPECIFICATIONS

Material	BK7, UV FS
Surface quality	20 – 10 scratch & dig (MIL-PRF-13830B)
Clear aperture	90% of the diameter
Diameter tolerance	+0.00; -0.12 mm
Thickness tolerance	±0.2 mm
Surface flatness	λ/10 @ 633 nm
Parallelism	30 arcsec or 3 arcsec

COATING

Technology	Electron beam multilayer dielectric
Adhesion and Durability	Per MIL-C-675A. Insoluble in lab solvents
Clear Aperture	Exceeds central 85% of diameter
Damage Threshold:	
BK7	>5 J/cm ² , 8 nsec pulse, 1064 nm
UV FS	>10 J/cm ² , 8 nsec pulse, 1064 nm
Angle of Incidence	0 degrees
Coated Surface Flatness	λ/10 at 633 nm over clear aperture



PARALLELISM 30 ARCSEC

Wavelength, nm	Diameter D, mm	Thickness T, mm	BK7		UV FS	
			Catalogue number	Price, EUR	Catalogue number	Price, EUR
266	12.7	3.0	–	–	224-1101E	79
355	12.7	3.0	–	–	223-1101E	65
532	12.7	3.0	222-0101E	51	222-1101E	65
1064	12.7	3.0	221-0101E	51	221-1101E	65
266	25.4	6.0	–	–	224-1201E	85
355	25.4	6.0	–	–	223-1201E	70
532	25.4	6.0	222-0201E	61	222-1201E	70
1064	25.4	6.0	221-0201E	61	221-1201E	70
266	38.1	8.0	–	–	224-1402E	131
355	38.1	8.0	–	–	223-1402E	126
532	38.1	8.0	222-0402E	86	222-1402E	126
1064	38.1	8.0	221-0402E	86	221-1402E	126
266	50.8	10.0	–	–	224-1502E	181
355	50.8	10.0	–	–	223-1502E	176
532	50.8	10.0	222-0502E	99	222-1502E	176
1064	50.8	10.0	221-0502E	99	221-1502E	176

PARALLELISM 3 ARCSEC

Wavelength, nm	Diameter D, mm	Thickness T, mm	BK7		UV FS	
			Catalogue number	Price, EUR	Catalogue number	Price, EUR
266	12.7	3.0	-		224-1103E	96
355	12.7	3.0	-		223-1103E	82
532	12.7	3.0	222-0103E	66	222-1103E	82
1064	12.7	3.0	221-0103E	66	221-1103E	82
266	25.4	6.0	-		224-1203E	125
355	25.4	6.0	-		223-1203E	111
532	25.4	6.0	222-0203E	88	222-1203E	111
1064	25.4	6.0	221-0203E	88	221-1203E	111
266	38.1	10.0	-		224-1403E	176
355	38.1	10.0	-		223-1403E	170
532	38.1	10.0	222-0403E	121	222-1403E	170
1064	38.1	10.0	221-0403E	121	221-1403E	170
266	50.8	12.0	-		224-1503E	217
355	50.8	12.0	-		223-1503E	212
532	50.8	12.0	222-0503E	148	222-1503E	212
1064	50.8	12.0	221-0503E	148	221-1503E	212

RELATED PRODUCTS

Uncoated Precision Windows
See page 1.12

Nd:YAG LASER OPTICS

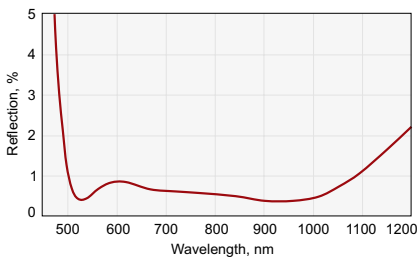
AR COATED LENS KITS



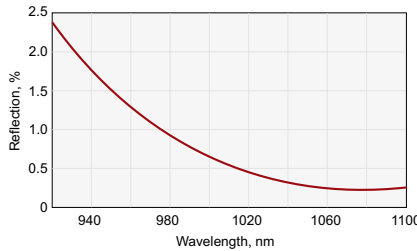
Lens kits contain different types of spherical (plano-convex, biconvex, plano-concave, biconcave) or cylindrical (plano-convex, plano-concave) lenses with various focal lengths. Kits are packed into foam lined plastic boxes for safe handling and storage. Kits are available with laser line and broadband multilayer anti-reflection coatings.

Spherical lens kits consist of 40 (large kit) or 15 (small kit) Ø25.4 mm lenses made of UVFS or N-BK7.

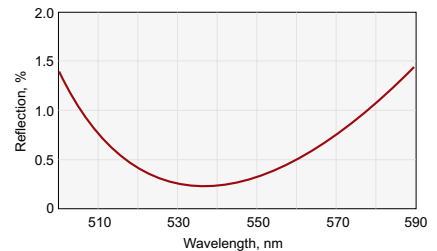
Cylindrical lens kits consist of 12 rectangular lenses (25.4 x 50.8 mm) made of UVFS or N-BK7.



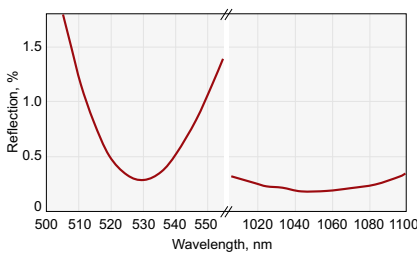
R<1.5% @ 500-1100 nm, AOI=0°



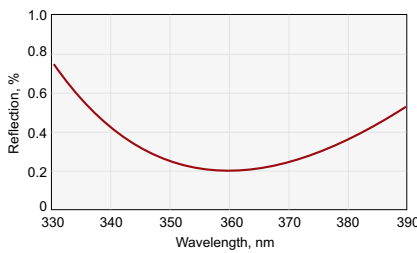
R<0.25% @ 1064 nm AOI=0°



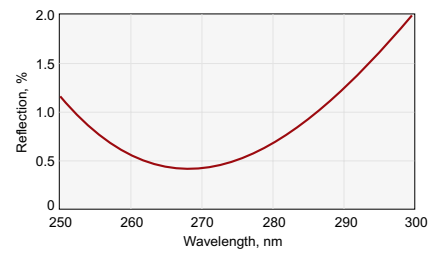
R<0.25% @ 532 nm AOI=0°



R<0.5% @ 532 nm+1064 nm, AOI=0°



R<0.25% @ 355 nm, AOI=0°



R<0.4% @ 266 nm, AOI=0°

Nd:YAG LASER AND NONLINEAR CRYSTALS

BK7 LENS KITS



Small Lenses Kit

Large N-BK7 Spherical Lens Kit (40 pcs.)

Coating	Catalogue number	Price, EUR
BBAR @ 400 – 700 nm, R<0.9%	140-0240-AR400-700	1820
BBAR @ 650 – 1100, R<1.0%	140-0240-AR650-1100	1930
BBAR @ 1050 – 1700 nm, R<1.0%	140-0240-AR1050-1700	2030
AR @ 532 + 1064 nm, R<0.5%	140-0240-AR532+1064	1750
AR @ 1064 nm, R<0.25%	140-0240-AR1064	1550
AR @ 532 nm, R<0.25%	140-0240-AR532	1550

Large BK7 Lens Kit

Type	Dia, mm	F, mm	Catalogue number
pl/cx	25.4	30	110-0205E
pl/cx	25.4	40	110-0207E
pl/cx	25.4	50	110-0209E
pl/cx	25.4	60	110-0211E
pl/cx	25.4	75	110-0215E
pl/cx	25.4	100	110-0219E
pl/cx	25.4	125	110-0223E
pl/cx	25.4	150	110-0227E
pl/cx	25.4	200	110-0231E
pl/cx	25.4	250	110-0235E
pl/cx	25.4	300	110-0239E
pl/cx	25.4	350	110-0241E
pl/cx	25.4	400	110-0243E
pl/cx	25.4	500	110-0247E
pl/cx	25.4	700	110-0251E
pl/cx	25.4	1000	110-0259E
bi/cx	25.4	25	111-0204E
bi/cx	25.4	30	111-0206E
bi/cx	25.4	40	111-0208E
bi/cx	25.4	50	111-0210E

Type	Dia, mm	F, mm	Catalogue number
bi/cx	25.4	60	111-0214E
bi/cx	25.4	75	111-0216E
bi/cx	25.4	100	111-0218E
bi/cx	25.4	150	111-0222E
bi/cx	25.4	200	111-0226E
bi/cx	25.4	250	111-0228E
bi/cx	25.4	500	111-0234E
bi/cx	25.4	1000	111-0250E
pl/cv	25.4	-40	112-0207E
pl/cv	25.4	-50	112-0209E
pl/cv	25.4	-75	112-0215E
pl/cv	25.4	-100	112-0219E
pl/cv	25.4	-150	112-0227E
pl/cv	25.4	-200	112-0231E
bi/cv	25.4	-25	114-0204E
bi/cv	25.4	-50	114-0208E
bi/cv	25.4	-75	114-0212E
bi/cv	25.4	-100	114-0214E
bi/cv	25.4	-150	114-0220E
bi/cv	25.4	-200	114-0224E

Small N-BK7 Spherical Lens Kit (15 pcs.)

Coating	Catalogue number	Price, EUR
BBAR @ 400 – 700 nm, R<0.9%	140-0215-AR400-700	990
BBAR @ 650 – 1100 nm, R<1.0%	140-0215-AR650-1100	1050
BBAR @ 1050 – 1700 nm, R<1.0%	140-0240-AR1050-1700	1150
AR @ 532 + 1064 nm, R<0.5%	140-0215-AR532+1064	770
AR @ 1064 nm, R<0.25%	140-0215-AR1064	700
AR @ 532 nm, R<0.25%	140-0215-AR532	700

Small BK7 Lens Kit

Type	Dia, mm	F, mm	Catalogue number
pl/cx	25.4	30	110-0205E
pl/cx	25.4	40	110-0207E
pl/cx	25.4	50	110-0209E
pl/cx	25.4	60	110-0211E
pl/cx	25.4	75	110-0215E
pl/cx	25.4	100	110-0219E
pl/cx	25.4	150	110-0227E
pl/cx	25.4	200	110-0231E

Type	Dia, mm	F, mm	Catalogue number
pl/cx	25.4	500	110-0247E
pl/cx	25.4	1000	110-0259E
pl/cv	25.4	-40	112-0207E
pl/cv	25.4	-50	112-0209E
pl/cv	25.4	-75	112-0215E
pl/cv	25.4	-100	112-0219E
pl/cv	25.4	-150	112-0227E

OPTICAL
COMPONENTS

NONLINEAR & LASER
CRYSTALS

Nd:YAG LASERLINE
COMPONENTS

FEMTOLINE
COMPONENTS

OPTICAL
SYSTEMS

OPTO-MECHANICAL
COMPONENTS

N-BK7 Cylindrical Lens Kit (12 pcs.)

Coating	Catalogue number	Price, EUR
BBAR @ 400-700 nm, R<0.9%	140-0212-AR400-700	1750
BBAR @ 650-1100 nm, R<0.7%	140-0212-AR650-1100	1815
BBAR @ 1050-1700 nm, R<0.7%	140-0212-AR1050-1700	2020
AR @ 532+1064 nm, R<0.5%	140-0212-ARD1064	1620
AR @ 1064 nm, R<0.25%	140-0212-AR1064	1550

N-BK7 Cylindrical Lens Kit

Type	Size, mm	F, mm	Catalogue number
pl/cx	25.4 × 50.8	50	120-0205E
pl/cx	25.4 × 50.8	75	120-0210E
pl/cx	25.4 × 50.8	100	120-0215E
pl/cx	25.4 × 50.8	150	120-0220E
pl/cx	25.4 × 50.8	200	120-0225E
pl/cx	25.4 × 50.8	300	120-0230E

Type	Size, mm	F, mm	Catalogue number
pl/cx	25.4 × 50.8	500	120-0235E
pl/cx	25.4 × 50.8	1000	120-0240E
pl/cv	25.4 × 50.8	-50	122-0205E
pl/cv	25.4 × 50.8	-75	122-0210E
pl/cv	25.4 × 50.8	-100	122-0215E
pl/cv	25.4 × 50.8	-150	122-0220E

UV FS LENS KITS



Large Lenses Kit

Large UV FS Spherical Lens Kit (40 pcs.)

Coating	Catalogue number	Price, EUR
BBAR @ 210 – 400 nm, R<2%	140-1240-AR210-400	3490
BBAR @ 350 – 900 nm, R<1.5%	140-1240-AR350-900	3290
BBAR @ 650 – 1100 nm, R<1.0%	140-1240-AR650-1100	3310
AR @ 532 + 1064 nm, R<0.5%	140-1240-AR532+1064	3130
AR @ 1064 nm, R<0.25%	140-1240-AR1064	2930
AR @ 532 nm, R<0.25%	140-1240-AR532	2930
AR @ 355 nm, R<0.25%	140-1240-AR355	3030
AR @ 266 nm, R<0.4%	140-1240-AR266	3130

Large UV FS Lens Kit

Type	Dia, mm	F, mm	Catalogue number
pl/cx	25.4	30	110-1203E
pl/cx	25.4	50	110-1205E
pl/cx	25.4	75	110-1209E
pl/cx	25.4	80	110-1210E
pl/cx	25.4	100	110-1211E
pl/cx	25.4	125	110-1216E
pl/cx	25.4	150	110-1217E
pl/cx	25.4	200	110-1219E
pl/cx	25.4	250	110-1221E
pl/cx	25.4	300	110-1223E
pl/cx	25.4	350	110-1225E
pl/cx	25.4	400	110-1227E
pl/cx	25.4	500	110-1233E
pl/cx	25.4	600	110-1235E
pl/cx	25.4	750	110-1239E
pl/cx	25.4	1000	110-1245E
bi/cx	25.4	25	111-1204E
bi/cx	25.4	40	111-1207E
bi/cx	25.4	50	111-1210E
bi/cx	25.4	75	111-1214E

Type	Dia, mm	F, mm	Catalogue number
bi/cx	25.4	100	111-1218E
bi/cx	25.4	150	111-1222E
bi/cx	25.4	200	111-1226E
bi/cx	25.4	250	111-1230E
bi/cx	25.4	300	111-1234E
bi/cx	25.4	400	111-1238E
bi/cx	25.4	500	111-1240E
bi/cx	25.4	1000	111-1260E
pl/cv	25.4	-50	112-1205E
pl/cv	25.4	-75	112-1209E
pl/cv	25.4	-100	112-1211E
pl/cv	25.4	-150	112-1217E
pl/cv	25.4	-200	112-1219E
pl/cv	25.4	-300	112-1223E
bi/cv	25.4	-25	114-1204E
bi/cv	25.4	-50	114-1208E
bi/cv	25.4	-75	114-1212E
bi/cv	25.4	-100	114-1216E
bi/cv	25.4	-150	114-1220E
bi/cv	25.4	-200	114-1224E

Small UV FS Spherical Lens Kit (15 pcs.)

Coating	Catalogue number	Price, EUR
BBAR @ 210 – 400 nm, R<2%	140-1215-AR210-400	1830
BBAR @ 350 – 900 nm, R<1.5%	140-1215-AR350-900	1660
BBAR @ 650 – 1100 nm, R<1.0%	140-1215-AR650-1100	1670
AR @ 532 + 1064 nm, R<0.5%	140-1215-AR532+1064	1390
AR @ 1064 nm, R<0.25%	140-1215-AR1064	1320
AR @ 532 nm, R<0.25%	140-1215-AR532	1320
AR @ 355 nm, R<0.25%	140-1215-AR355	1350
AR @ 266 nm, R<0.4%	140-1215-AR266	1380

Small UV FS Lens Kit

Type	Dia, mm	F, mm	Catalogue number
pl/cx	25.4	30	110-1203E
pl/cx	25.4	50	110-1205E
pl/cx	25.4	75	110-1209E
pl/cx	25.4	100	110-1211E
pl/cx	25.4	125	110-1216E
pl/cx	25.4	150	110-1217E
pl/cx	25.4	200	110-1219E
pl/cx	25.4	300	110-1223E

Type	Dia, mm	F, mm	Catalogue number
pl/cx	25.4	500	110-1233E
pl/cx	25.4	1000	110-1245E
pl/cv	25.4	-50	112-1205E
pl/cv	25.4	-75	112-1209E
pl/cv	25.4	-100	112-1211E
pl/cv	25.4	-125	112-1215E
pl/cv	25.4	-150	112-1217E

UV FS Cylindrical Lens Kit (12 pcs.)

Coating	Catalogue number	Price, EUR
BBAR @ 210-400 nm, R<2%	140-0212-ARB300	2720
BBAR @ 350-900 nm, R<1.5%	140-0212-ARB625	2630
BBAR @ 650-1100 nm, R<0.7%	140-0212-ARB825	2550

UV FS Cylindrical Lens Kit

Type	Size, mm	F, mm	Catalogue number
pl/cx	25.4 × 50.8	50	120-1205E
pl/cx	25.4 × 50.8	75	120-1210E
pl/cx	25.4 × 50.8	100	120-1215E
pl/cx	25.4 × 50.8	150	120-1220E
pl/cx	25.4 × 50.8	200	120-1225E
pl/cx	25.4 × 50.8	300	120-1230E

Type	Size, mm	F, mm	Catalogue number
pl/cx	25.4 × 50.8	500	120-1235E
pl/cx	25.4 × 50.8	1000	120-1240E
pl/cv	25.4 × 50.8	-50	122-1205E
pl/cv	25.4 × 50.8	-75	122-1210E
pl/cv	25.4 × 50.8	-100	122-1215E
pl/cv	25.4 × 50.8	-150	122-1220E

RELATED PRODUCTS

Uncoated Lens Kits
See page 1.47



Beam Expanders
See page 5.4



Self-Centring Lens Mounts 830-0010
Find more at EksmaOptics.com



Tweezers/Forceps for Optical Components 260-1050
See page A.4



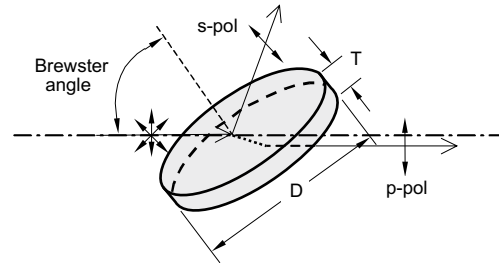
THIN FILM LASER POLARIZERS (56° ANGLE OF INCIDENCE)

Thin film polarizers separate s- and p- polarization components. Due to their high laser damage threshold, thin film polarizers can be used as an alternative to Glan-Taylor laser polarizing prisms or cube polarizing beamsplitters.

Nd:YAG Laser Line thin film polarizers are used in high energy lasers. They can be used as extracavity attenuators for Nd:YAG laser fundamental and its harmonics or intracavity Q-switch hold-off polarizers. The most efficient way to use these polarizers is at Brewster's angle – $56 \pm 2^\circ$.

SPECIFICATIONS

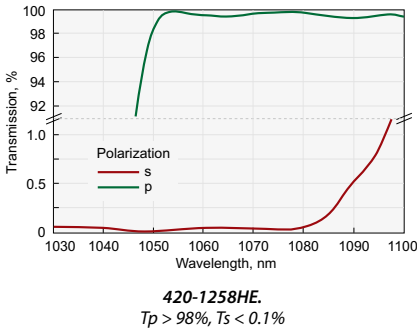
Material	BK7, UV FS
Surface quality	20–10 scratch & dig (MIL-PRF-13830B)
Transmitted wavefront distortion	$\lambda/10$ @ 633 nm
Parallelism	<30 arcsec
Clear aperture	>90%
Angle of incidence (AOI)	$56 \pm 2^\circ$
Diameter tolerance	+0.0; -0.12 mm
Thickness tolerance	± 0.2 mm
Laser damage threshold	6 J/cm ² 10 nsec pulse at 1064 nm typical



HIGH EXTINCTION RATIO POLARIZERS

ROUND POLARIZERS

Material – UV FS; $T_p > 98\%$, $T_s < 0.1\%$; extinction ratio for transmitted light $T_p/T_s > 1000:1$



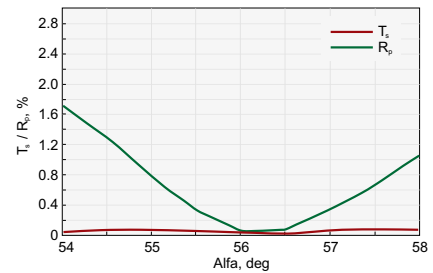
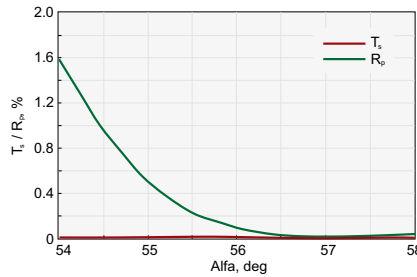
Wavelength, nm	Diameter D, mm	Thickness T, mm	Catalogue number	Price, EUR
355	25.4	3	420-1252HE	218
532	25.4	3	420-1254HE	185
1064	25.4	3	420-1258HE	216

RECTANGULAR POLARIZERS

Material – UV FS; $T_p > 98\%$, $T_s < 0.1\%$; extinction ratio for transmitted light $T_p/T_s > 1000:1$

Wavelength, nm	Rectangular dimensions		Thickness T, mm	Catalogue number	Price, EUR
	Length, mm	Width, mm			
532	20	15	6	420-1484HE	155
532	30	20	6	420-1584HE	210
1064	20	15	6	420-1488HE	165
1064	30	20	6	420-1588HE	220

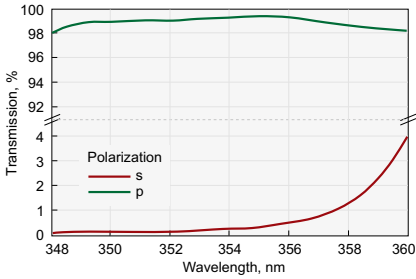
ULTRA HIGH TRANSMISSION THIN FILM POLARIZERS



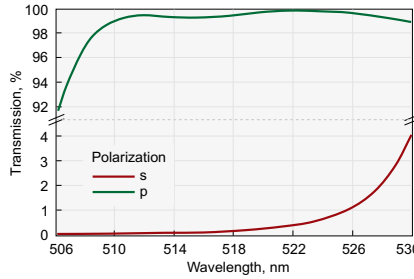
ROUND POLARIZERS. Material – UV FS; $T_s < 0.2\%$, $R_p < 0.2\%$; extinction ratio for transmitted light $T_p/T_s > 500:1$

Wavelength, nm	Diameter D, mm	Thickness T, mm	Catalogue number	Price, EUR
532	25.4	3	420-1254UHT	260
1064	25.4	3	420-1258UHT	304

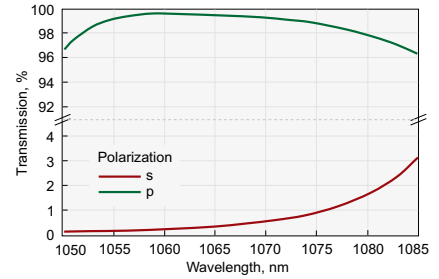
HIGH TRANSMISSION THIN FILM POLARIZERS



420-1252HT.
High Transmission @ 355 nm, Rs/Tp > 99.5/99.0 %



420-1254HT.
High Transmission @ 532 nm, Rs/Tp > 99.5/99.0 %



420-1258HT.
High Transmission @ 1064 nm, Rs/Tp > 99.5/99.0 %

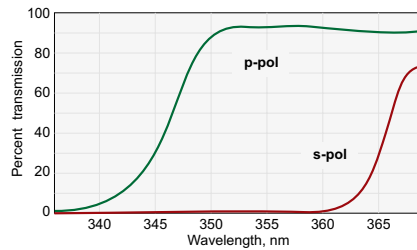
ROUND POLARIZERS. Material - UV FS. Rs / Tp > 99.5 / 99.0 %; extinction ratio for transmitted light Tp / Ts > 200:1

Wavelength, nm	Diameter D, mm	Thickness T, mm	Catalogue number	Price, EUR
355	25.4	3.0	420-1252HT	237
532	25.4	3.0	420-1254HT	200
1064	25.4	3.0	420-1258HT	234

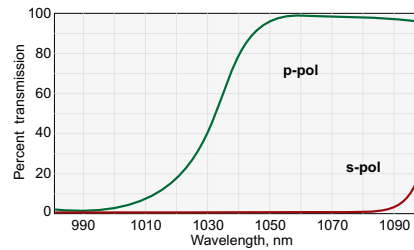
RECTANGULAR POLARIZERS. Material - UV FS. Rs / Tp > 99.5 / 99.0 %; extinction ratio for transmitted light Tp / Ts > 200:1

Wavelength, nm	Rectangular dimensions		Thickness T, mm	Catalogue number	Price, EUR
	Length, mm	Width, mm			
1064	28.6	14.3	3.0	420-1288HT	270

STANDARD THIN FILM POLARIZERS



420-1252.
Transmission @ 355 nm, Rs/Tp > 99.5/95 %



420-1258.
Transmission @ 1064 nm, Rs/Tp > 99.5/95 %

ROUND POLARIZERS. Material - BK7; Rs / Tp > 99.5 / 95.0 %; extinction ratio for transmitted light Tp/Ts > 200:1

Wavelength, nm	Diameter D, mm	Thickness T, mm	Catalogue number	Price, EUR
532	12.7	3.0	420-0124E	108
1064	12.7	3.0	420-0128E	115
532	25.4	3.0	420-0254E	128
1064	25.4	3.0	420-0258E	155
532	50.8	6.0	420-0504E	206
1064	50.8	6.0	420-0508E	255

ROUND POLARIZERS. Material - UV FS; Rs / Tp > 99.5 / 95.0 %; extinction ratio for transmitted light Tp/Ts > 200:1

Wavelength, nm	Diameter D, mm	Thickness T, mm	Catalogue number	Price, EUR
355	12.7	3.0	420-1122E	164
532	12.7	3.0	420-1124E	131
1064	12.7	3.0	420-1128E	145
355	25.4	3.0	420-1252E	182
532	25.4	3.0	420-1254E	154
1064	25.4	3.0	420-1258E	180
355	50.8	6.0	420-1502E	325
532	50.8	6.0	420-1504E	295
1064	50.8	6.0	420-1508E	315

RECTANGULAR POLARIZERS. Material - BK7; Rs / Tp > 99.5 / 95.0 %; extinction ratio for transmitted light Tp/Ts > 200:1

Wavelength, nm	Rectangular dimensions		Thickness T, mm	Catalogue number	Price, EUR
	Length, mm	Width, mm			
532	28.6	14.3	3.0	420-0284	142
1064	28.6	14.3	3.0	420-0288	170

RECTANGULAR POLARIZERS. Material - UV FS; Rs / Tp > 99.5 / 95.0 %; extinction ratio for transmitted light Tp/Ts > 200:1

Wavelength, nm	Rectangular dimensions		Thickness T, mm	Catalogue number	Price, EUR
	Length, mm	Width, mm			
355	28.6	14.3	3.0	420-1282	255
532	28.6	14.3	3.0	420-1284	215
1064	28.6	14.3	3.0	420-1288	225

RELATED PRODUCTS

Thin Film Laser Polarizers of other wavelengths
See page 1.56

Glan and Wollaston Prisms
See page 1.63

Adapters for Polarizer at 56° 840-0117, 840-0118
Find more at EksmaOptics.com



Variable Attenuator for Nd:YAG linearly Polarized Laser Beam 990-0070
Find more at EksmaOptics.com

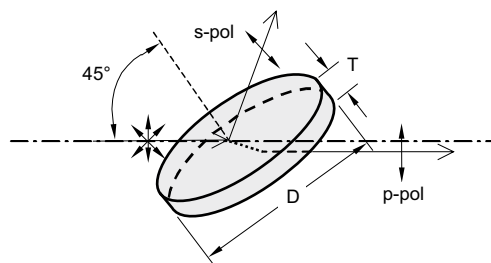


THIN FILM LASER POLARIZERS (45° ANGLE OF INCIDENCE)

These thin film polarizers separate or combine the s- and p-polarization components at 45° angle of incidence. They are designed for use in high energy lasers. Polarizers are made from UV FS and feature high laser damage threshold reaching 10 J/cm² at 1064 nm.

SPECIFICATIONS

Substrate material	UV FS
Surface quality	20–10 scratch & dig (MIL-PRF-13830B)
Transmitted wavefront distortion	$\lambda/10$ @ 633 nm
Clear aperture	> 90% of diameter
Angle of Incidence (AOI)	45 ± 2°
Parallelism	< 30 arcsec



THIN FILM POLARIZERS WITH HIGH EXTINCTION RATIO

ROUND POLARIZERS

Material – UV FS. $T_p > 98\%$, $T_s < 0.1\%$; extinction ratio for transmitted light $T_p/T_s > 1000:1$

Wavelength, nm	Diameter D, mm	Thickness T, mm	Catalogue number	Price, EUR
355	25.4	3	420-1252i45HE	328
532	25.4	3	420-1254i45HE	295
1064	25.4	3	420-1258i45HE	315
355	50.8	6	420-1502i45HE	640
532	50.8	6	420-1504i45HE	555
1064	50.8	6	420-1508i45HE	620

STANDARD THIN FILM POLARIZERS

ROUND POLARIZERS

Material – UV FS. $R_s / T_p > 99.5 / 95.0\%$. Extinction ratio for transmitted light $T_p/T_s > 200:1$

Wavelength, nm	Diameter D, mm	Thickness T, mm	Catalogue number	Price, EUR
355	25.4	3	420-1252i45	238
532	25.4	3	420-1254i45	200
1064	25.4	3	420-1258i45	225
355	50.8	6	420-1502i45	455
532	50.8	6	420-1504i45	395
1064	50.8	6	420-1508i45	440

QUARTZ RETARDATION PLATES

Quartz Retardation Plates are made of material enabling linear birefringence. These plates are made of high quality optical grade crystalline quartz, featuring high damage threshold. Retardation

plates rotate polarization's direction ($\lambda/2$) or convert linear into circular polarization or vice versa ($\lambda/4$). Quartz retardation plates are supplied mounted and AR coated.

ZERO ORDER OPTICALLY CONTACTED WAVEPLATES

FEATURES

- › Zero Order Waveplates for Nd:YAG fundamental and its harmonics
- › Easily aligned
- › Temperature insensitive
- › Moderately insensitive to wavelength

Zero order plates are comprised of two different plates cut parallel to their optical axis. This construction make plates less dependent on temperature. The plates are polished to different thicknesses enabling to achieve required retardation difference. These component plates have orthogonal optic axis directions, so that the roles of the ordinary and extraordinary rays are interchanged in passing from one plate to another. The thickness of the plate determines the phase shift between the ordinary and extraordinary beams for any specific wavelength.



SPECIFICATIONS

Material	Single crystal quartz
Optical axis	normal to facet on circumference of retarder
Clear aperture	Ø17 mm (other dimensions on request)
Ring mount outer diameter	25.4 +0.0 / -0.12 mm
Nominal thickness of waveplate	1.5 – 2.5 mm
Surface quality	20–10 scratch & dig (MIL-PRF-13830B)
Wavefront distortion	$\lambda/10$ @ 633 nm
Parallelism	< 10 arcsec
AR coating	R < 0.4%
Damage threshold	> 0.5 J/cm ² , 10 nsec pulse, 1064 nm typical

Ø12.7 mm waveplates

Clear aperture Ø11 mm, unmounted

Wavelength, nm	Retardation $\lambda/2$		Retardation $\lambda/4$	
	Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	460-4205D12	165	460-4405D12	165
532	460-4230D12	165	460-4430D12	165
355	460-4240D12	175	460-4440D12	175
266	460-4245D12	185	460-4445D12	185

Ø20 mm waveplates

Clear aperture Ø17 mm, mounted into Ø25.4 mm ring holder

Wavelength, nm	Retardation $\lambda/2$		Retardation $\lambda/4$	
	Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	460-4205	245	460-4405	245
532	460-4230	245	460-4430	245
355	460-4240	270	460-4440	270
266	460-4245	280	460-4445	280

RELATED PRODUCTS

Zero Order Optically Contacted Plates of other wavelengths. [See page 1.66](#)

Achromatic Air-Spaced Waveplates. [See page 1.68](#)

ZERO ORDER AIR-SPACED WAVEPLATES

FEATURES

- › For high power laser application



Wavelength, nm	AR coating range, nm	Retardation $\lambda/2$		Retardation $\lambda/4$	
		Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	1035–1095	464-4205	310	464-4405	310
532	515–545	464-4230	310	464-4430	310
355	345–365	464-4240	335	464-4440	335
266	257–275	464-4245	345	464-4445	345
213	210–216	464-4253	420	464-4453	420

SPECIFICATIONS

Material	Single crystal quartz
Optical axis	normal to facet on circumference of retarder
Clear aperture	Ø17 mm
Ring mount outer diameter	25.4 +0.0 / -0.12 mm
Surface quality	20–10 scratch & dig (MIL-PRF-13830B)
Wavefront distortion	$\lambda/10$ @ 633 nm
Parallelism	< 10 arcsec
AR coating	R < 0.5%
Damage threshold	> 10 J/cm ² , 10 nsec pulse, 1064 nm typical

RELATED PRODUCTS

Polarizer Holder 840-0180

[Find more at EksmaOptics.com](#)



LOW ORDER WAVEPLATES

FEATURES

- › Thickness 0.15–0.35 mm
- › Thinner than multiple order

Low order plates are less temperature sensitive and temperature dependent than multiple order plates. These plates are suitable for high and low power applications.

Ø12.7 mm waveplates

Clear aperture Ø11 mm, unmounted

Wavelength, nm	Retardation $\lambda/2$		Retardation $\lambda/4$	
	Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	461-4205D12	105	461-4405D12	105
532	461-4230D12	105	461-4430D12	105
355	461-4240D12	115	461-4440D12	115

Ø20 mm waveplates

Clear aperture Ø17 mm, mounted into Ø25.4 mm ring holder

Wavelength, nm	Retardation $\lambda/2$		Retardation $\lambda/4$	
	Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	461-4205	160	461-4405	160
532	461-4230	160	461-4430	160
355	461-4240	192	461-4440	192

SPECIFICATIONS

Material	Single crystal quartz
Optical axis	normal to facet on circumference of retarder
Clear aperture	Ø17 mm (other dimensions on request)
Ring mount outer diameter	25.4 +0.0 / -0.12 mm
Nominal thickness of waveplate	0.15 – 0.35 mm
Surface quality	20–10 scratch & dig (MIL-PRF-13830B)
Wavefront distortion	$\lambda/10$ @ 633 nm
Parallelism	< 10 arcsec
AR coating	R < 0.4%
Damage threshold	10 J/cm ² , 10 nsec pulse, 1064 nm typical

RELATED PRODUCTS

Low Order Plates of other wavelengths

See page 1.69

High Precision Rotation Polarizer, Waveplate Mount 840-0186

Find more at EksmaOptics.com



MULTIPLE ORDER WAVEPLATES

FEATURES

- › Polished to 1 – 1.5 mm thickness
- › Made from a single crystalline plate

Multiple order plates are more dependent on the temperature changes than zero order plates. A change of $\pm 1\%$ from the designed wavelength of multiple order plate can result in difficulties in retardation. Contrary, with zero order plates $\pm 1\%$ and even $\pm 2\%$ change from the designed wavelength can cause only small retardation change.

Ø12.7 mm waveplates

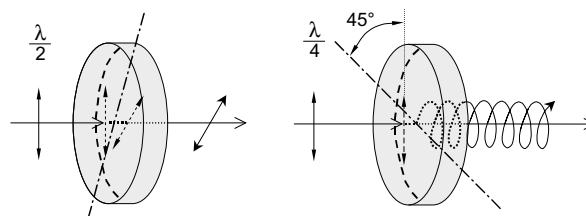
Clear aperture Ø11 mm, unmounted

Wavelength, nm	Retardation $\lambda/2$		Retardation $\lambda/4$	
	Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	462-4205D12	90	462-4405D12	90
532	462-4230D12	90	462-4430D12	90
355	462-4240D12	95	462-4440D12	95

Ø20 mm waveplates

Clear aperture Ø17 mm, mounted into Ø25.4 mm ring holder

Wavelength, nm	Retardation $\lambda/2$		Retardation $\lambda/4$	
	Catalogue number	Price, EUR	Catalogue number	Price, EUR
1064	462-4205	138	462-4405	138
532	462-4230	138	462-4430	138
355	462-4240	143	462-4440	143
266	462-4245	153	462-4445	153



SPECIFICATIONS

Material	Single crystal quartz
Optical axis	normal to facet on circumference of retarder
Clear aperture	Ø17 mm (other dimensions on request)
Ring mount outer diameter	25.4 +0.0 / -0.2 mm
Nominal thickness of waveplate	0.8 – 1.5 mm
Surface quality	20–10 scratch & dig (MIL-PRF-13830B)
Wavefront distortion	$\lambda/10$ @ 633 nm
Parallelism	< 10 arcsec
AR coating	R < 0.4%
Damage threshold	10 J/cm ² , 10 nsec pulse, 1064 nm typical

RELATED PRODUCTS

Multiple Order Plates of other wavelengths

See page 1.70

Adjustable Polarizer Holder of Side Drive 840-0195

Find more at EksmaOptics.com



MULTIPLE ORDER DUAL WAVELENGTH WAVEPLATES

FEATURES

- › Operate at both first and second Nd:YAG laser harmonics
- › Retardation tolerance $< \lambda/300$

Retardation and Wavelength	Catalogue number	Price, EUR
λ @ 1064 nm + $\lambda/2$ @ 532 nm	463-4120	215
λ @ 1064 nm + $\lambda/4$ @ 532 nm	463-4140	215
$\lambda/2$ @ 1064 nm + λ @ 532 nm	463-4210	215
$\lambda/2$ @ 1064 nm + $\lambda/2$ @ 532 nm	463-4220	215
$\lambda/2$ @ 1064 nm + $\lambda/4$ @ 532 nm	463-4240	215
$\lambda/4$ @ 1064 nm + λ @ 532 nm	463-4410	215
$\lambda/4$ @ 1064 nm + $\lambda/2$ @ 532 nm	463-4420	215
$\lambda/4$ @ 1064 nm + $\lambda/4$ @ 532 nm	463-4440	215

SPECIFICATIONS

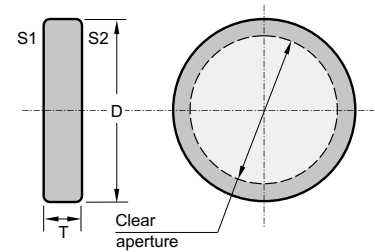
Material	Single crystal quartz
Optical axis	normal to facet on circumference of retarder
Clear aperture	$\varnothing 17$ mm
Ring mount outer diameter	$25.4 + 0.0 / - 0.2$ mm
Nominal thickness of waveplate	0.2 – 1.2 mm
Surface quality	20–10 scratch & dig (MIL-PRF-13830B)
Wavefront distortion	$\lambda/10$ @ 633 nm
Parallelism	< 10 arcsec
AR coating	$R < 0.5\%$
Damage threshold	5 J/cm ² , 10 nsec pulse, 1064 nm typical

POLARIZATION PLANE ROTATORS

FEATURES

- › Made of crystalline quartz
- › Intended to rotate a beam polarization plane strictly to an appropriate angle using the circular birefringent effect

Compared to a waveplate, a rotator has an intrinsic advantage, being independent of rotation around its own optical axis. It needs no adjustment, only to be installed normal to incident radiation. A polarization plane rotator is normally used for the specific wavelength. It is only slightly dependent on ambient temperature.



SPECIFICATIONS

Material	Single crystal quartz
Optical axis	Normal to faces S1, S2 of rotator
Clear aperture	17 mm for 20 mm diameter
Ring mount outer diameter	$D = 25.4 + 0.0 / - 0.2$ mm
Mount Thickness	$T = 6 - 20$ mm (depending on wavelength and rotation angle)
Surface quality	20-10 scratch & dig (MIL-PRF-13830B)
Wavefront distortion	$\lambda/10$
Parallelism	< 10 arcsec
AR coating	$R < 0.2\%$ both sides
Damage threshold	5 J/cm ² , 10 nsec pulse, 1064 nm typical

Polarization plane rotators for any wavelength from 200 to 2300 nm are available.

RELATED PRODUCTS

Polarization plane rotators of other wavelengths

See page 1.72

Kinematic Mirror and Beamsplitter Mount 840-0020

Find more at EksmaOptics.com



Kinematic Positioning Mount 840-0193

Find more at EksmaOptics.com



Wavelength, nm	Rotation angle of polarization plane, deg	Catalogue number	Price, EUR
266	45	470-4264	245
266	90	470-4269	245
355	45	470-4354	195
355	90	470-4359	195
532	45	470-4534	195
532	90	470-4539	195
1064	45	470-4644	215
1064	90	470-4649	215

Please contact us for other size or wavelengths requirements.

VARIABLE ATTENUATOR FOR Nd:YAG LINEARLY POLARIZED LASER BEAM 990-0070

FEATURES

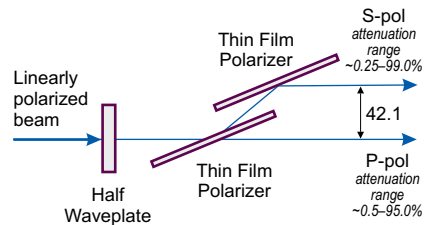
- › Divides laser beam into two parallel beams of manually adjustable intensity ratio
- › Large dynamic range
- › Transmitted beam shift ~0.5 mm
- › High Optical damage threshold



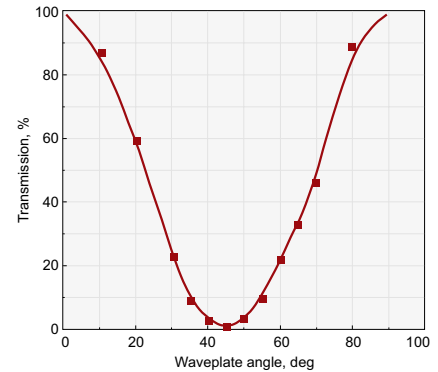
Note: Movable base 820-0090, Rod Holder 820-0050-02 and standard rod should be ordered separately.

This variable attenuator/beamsplitter consists of special design opto-mechanical Adapter and precision opto-mechanical holder 840-0197. Two thin film brewster type polarizers, which reflect s-polarized light while transmitting p-polarized light, are housed into adapter. A quartz multiple order half waveplate is housed in rotating holder 840-0197.

The intensity ratio of those two beams may be continuously varied without alteration of other beam parameters by rotating the waveplate. The intensity of either exit beam,



or their intensity ratio, can be controlled over a wide dynamic range. P-polarization could be selected for maximum transmission, or high-purity s-polarization could be reflected when maximum attenuation of the transmitted beam takes place. The holder 840-0197 allows to adjust angle of incidence of the Thin Film Brewster type polarizers by $\pm 2^\circ$ and to get the maximum polarization contrast.



SPECIFICATIONS

Aperture diameter	17 mm
Damage threshold	5 J/cm ² pulsed at 1064 nm, typical
Polarization Contrast (after 1st polarizer)	>1:200
Polarization Contrast (after 2nd polarizer)	>1:500
Weight	0.35 kg

Wavelength, nm	Catalogue number	Price, EUR
266	990-0070-266H *	1020
355	990-0070-355	750
532	990-0070-532	650
1064	990-0070-1064	650

* With Zero Order Air-Spaced half waveplate.

RELATED PRODUCTS

Neutral Density Filters

See page 1.14

Thin Film Laser Polarizers for Nd:YAG applications

See page 3.16

Motorized Variable Attenuator for Linearly Polarized Laser Beam 990-0070M

See page 5.15

Beam dumps 990-0800, 990-0820

See page 5.22



VARIABLE ATTENUATOR FOR Nd:YAG LINEARLY POLARIZED LASER BEAM 990-0071

FEATURES

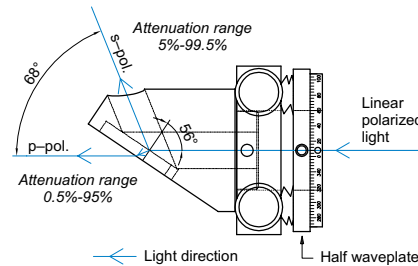
- Divides laser beam into separated by 68° angle two beams of manually adjustable intensity ratio
- Large dynamic range
- Transmitted beam shift ~0.5 mm
- High Optical damage threshold



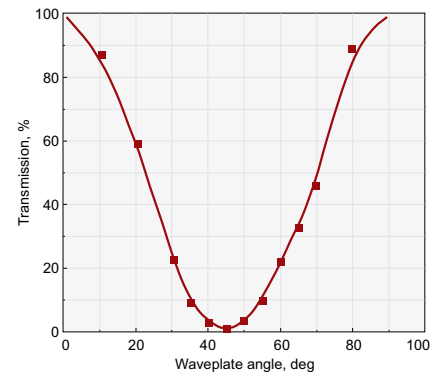
Note: Solid Base Height Extender 820-0210 and Standard Rod 820-0020-20 should be ordered separately

This variable attenuator/beamsplitter consists of special design opto-mechanical adapter for polarizer at 56° 840-0117A or 840-0118A and precision opto-mechanical holder 840-0197. Thin Film Brewster type polarizer, which reflect s-polarized light at 56° while transmitting p-polarized light, is housed into adapter for polarizer at 56°. Quartz multiple order half waveplate is housed in rotating holder 840-0197.

The intensity ratio of those two beams may be continuously varied without alteration of other beam parameters by rotating the



waveplate. The intensity of either exit beam, or their intensity ratio, can be controlled over a wide dynamic range. P-polarization could be selected for maximum transmission, or high-purity s-polarization could be reflected when maximum attenuation of the transmitted beam takes place. The holder 840-0197 allows to adjust Angle Of Incidence of the Thin Film Brewster type polarizer by ±2° and to get the maximum polarization contrast.



SPECIFICATIONS

Aperture diameter	10 mm
Damage threshold	5 J/cm ² pulsed at 1064 nm, typical
Polarization Contrast	>1:200
Weight	0.25 kg

Wavelength, nm	Catalogue number	Price, EUR
266	990-0071-266H *	690
355	990-0071-355	475
532	990-0071-532	445
1064	990-0071-1064	445

* With Zero Order Air-Spaced half waveplate.

RELATED PRODUCTS

Motorized Variable Attenuator for Linearly Polarized Laser Beam 990-0071M
See page 5.18



Multiple Order Plates for Nd:YAG applications
See page 3.20

Thin Film Laser Polarizers for Nd:YAG applications
See page 3.16

OPTICAL COMPONENTS

NONLINEAR & LASER CRYSTALS

Nd:YAG LASERLINE COMPONENTS

FEMTOLINE COMPONENTS

OPTICAL SYSTEMS

OPTO-MECHANICAL COMPONENTS

VARIABLE ATTENUATOR FOR Nd:YAG LASER PULSES 990-0072

FEATURES

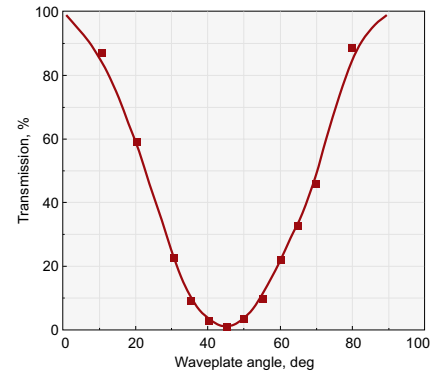
- › Divides laser beam into two beams of manually adjustable intensity ratio separated by 68° angle
- › Large dynamic range
- › Transmitted beam shift ~1 mm
- › High optical damage threshold
- › Motorized version 990-0072M available online



This variable attenuator/beamsplitter consists of Polarizer Holder 840-0190-01 and Kinematic Mirror/Beamsplitter Mount 840-0056-12. UVFS Thin Film Brewster type polarizer diameter 50.8 mm, which reflect s-polarized light while transmitting p-polarized light, is housed into Beamsplitter Mount 840-0056-12. A quartz Multi Order Half Waveplate diameter 25.4 mm housed in rotating holder 840-0190-01 and placed in the incident linearly polarized laser beam.

The intensity ratio of those two separated and different polarized beams may be continuously varied without alteration of other beam parameters by rotating the waveplate. The intensity of either exit beam, or their intensity ratio, can be controlled over a wide dynamic range. P-polarization could be selected for maximum transmission, or high-purity s-polarization could be reflected when maximum attenuation of the transmitted beam takes place.

The holder 840-0056-12 allows to adjust Angle Of Incidence of the Thin Film Brewster type polarizers by $\pm 4.5^\circ$ and to get the maximum extinction contrast. The mounts are on rods, rod holders and Movable Base 820-0090. The optical axis height from the table top can be adjusted in the range 78-88 mm. Other height can be offered as custom changing the standard rods and rod holders into higher.

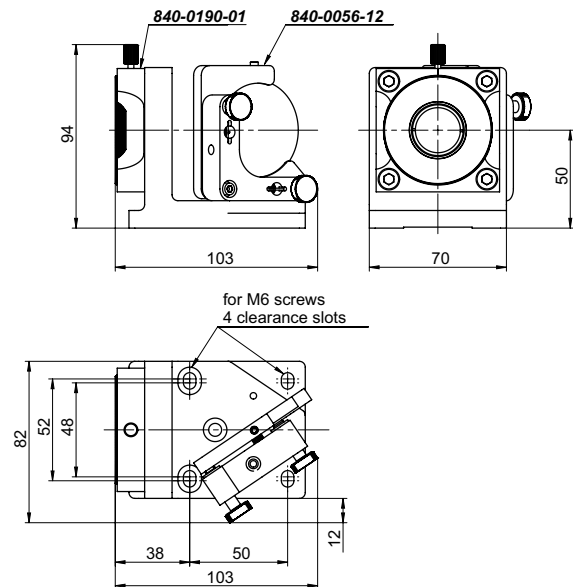


SPECIFICATIONS

Clear Aperture diameter	22 mm
Damage threshold	>5 J/cm ² , 10 ns pulse, 10 Hz at 1064 nm, typical
Polarization Contrast	>1:200
Transmitted beam shift	~1 mm
Weight	0.45 kg

Wavelength, nm	Catalogue number	Price, EUR
266	990-0072-266H *	1085
355	990-0072-355	765
532	990-0072-532	735
1064	990-0072-1064	755

* With Zero Order Air-Spaced half waveplate.



VARIABLE ATTENUATOR FOR Nd:YAG LASER PULSES 990-0073

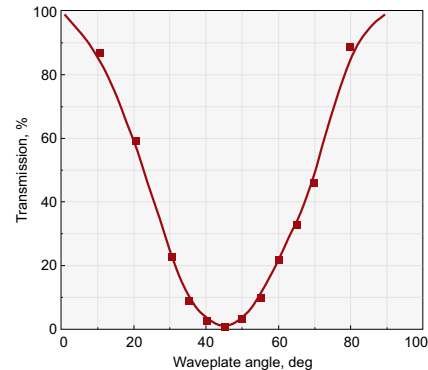
FEATURES

- › Divides laser beam into two beams of manually adjustable intensity ratio separated by 68° angle
- › Large dynamic range
- › Transmitted beam shift ~1.4 mm
- › High optical damage threshold

This variable attenuator/beamsplitter consists of Polarizer Holder 840-0180-A2 and Kinematic Mirror/Beamsplitter Mount 840-0056-13. UVFS Thin Film Brewster type polarizer Ø76.2 mm, which reflect s-polarized light while transmitting p-polarized light, is housed into Beamsplitter Mount 840-0056-13. A quartz Multi Order Half Waveplate Ø40 mm housed in rotating holder 840-0180-A2 and placed in the incident linearly polarized laser beam.

The intensity ratio of those two separated and different polarized beams may be continuously varied without alteration of other beam parameters by rotating the waveplate. The intensity of either exit beam, or their intensity ratio, can be controlled over a wide dynamic range. P-polarization could be selected for maximum transmission, or high-purity s-polarization could be reflected when maximum attenuation of the transmitted beam takes place.

The holder 840-0056-13 allows to adjust Angle Of Incidence of the Thin Film Brewster type polarizers by ±4.5° and to get the maximum extinction contrast. The mounts are on rods, rod holders and Movable Base 820-0090. The optical axis height from the table top can be adjusted in the range 92-98 mm. Other height can be offered as custom changing the standard rods and rod holders into higher.

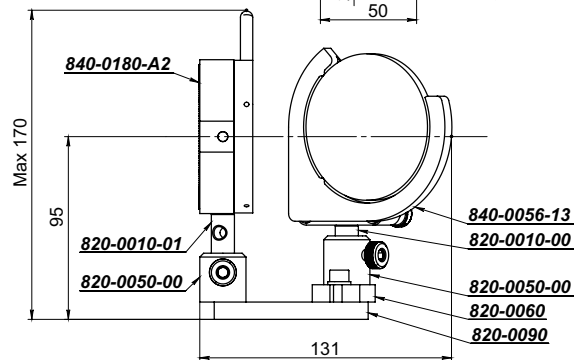
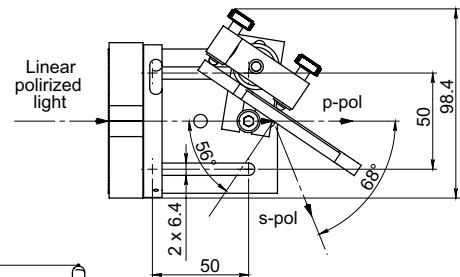


SPECIFICATIONS

Clear Aperture diameter	36 mm
Damage threshold	>5 J/cm ² , 10 ns pulse, 10 Hz at 1064 nm, typical
Polarization Contrast	>1:200
Transmitted beam shift	~1.4 mm
Weight	0.6 kg

Wavelength, nm	Catalogue number	Price, EUR
266	990-0073-266H *	1790
355	990-0073-355	1460
532	990-0073-532	1440
1064	990-0073-1064	1515

* With Zero Order Air-Spaced half waveplate.



OPTICAL COMPONENTS

NONLINEAR & LASER CRYSTALS

Nd:YAG LASERLINE COMPONENTS

FEMTOLINE COMPONENTS

OPTICAL SYSTEMS

OPTO-MECHANICAL COMPONENTS

Nd:YAG Laser Crystals

Nd:YAG CRYSTALS (STANDARD RODS)



SPECIFICATIONS OF STANDARD Nd:YAG LASER RODS

Nd Doping Level	0.8% or 1.1%
Orientation	<111> crystalline direction
Surface Quality	10 – 5 scratch & dig (MIL-PRF-13830B)
Surface Flatness	$\lambda/10$ at 633 nm
Parallelism	< 10 arcsec
Perpendicularity	< 5 arcmin for plano/plano ends
Diameter Tolerance	+0 / -0.05 mm
Length Tolerance	+1 / -0.5 mm
Clear Aperture	> 90 % of full aperture
Chamfers	0.1 mm at 45 deg
Coating	Both sides coated AR @ 1064 nm, R < 0.2%, AOI = 0 deg
Barrel Grooving	All Ø6.35, 8, 10, 12 mm rods with barrel grooving

Diameter, mm	Length, mm	Doping, %	Wedge of the ends, deg	Description	Coating	Application	Catalogue number	Price, EUR
3	53	0.9	0/0	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-3-0.9-A/A	215
3	65	0.8	0/0	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-3-0.8-A/A	265
3	65	1.1	0/0	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-3-1.1-A/A	325
4	65	0.8	3/3 parallel	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-4-0.8-A/A	530
4	65	1.1	3/3 parallel	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-4-1.1-A/A	530
6.35	85*	1.1	3/3 parallel	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-6.35-1.1-A/A	890
8	85*	1.1	3/3 parallel	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-8-1.1-A/A	1340
10	85*	1.1	3/3 parallel	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-10-1.1-A/A	2200
12	100*	0.8	3/3 parallel	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-12-0.8-A/A	4740
12	100*	1.1	3/3 parallel	Nd:YAG	AR/AR @ 1064 nm	Generation @ 1064 nm	E-Y-12-1.1-A/A	4740

* Rods with barrel grooving, except 10 mm at both ends of the rod without grooving.

RELATED PRODUCTS

Laser Safety Eyewear

See page 1.17



Visualizator 990-0840

See page 1.17



Pockels Cells for Q-Switching

Find more at EksmaOptics.com



NONLINEAR CRYSTALS for SHG @ 1064 nm

LBO CRYSTALS

LBO crystals feature the highest damage threshold, small walk-off and have high efficiency. These crystals are the best choice for harmonics generation of relatively high power and high repetition rate Q-switched or mode-locked lasers.

Size, mm	Orientation		Type	Coating	Application	Catalogue number	Price, EUR
	Theta, deg	Phi, deg					
3x3x10	90	11.6	Type 1	AR/AR @ 1064+532 nm	SHG@1064 nm	LBO-401	245
3x3x15	90	11.6	Type 1	AR/AR @ 1064+532 nm	SHG@1064 nm	LBO-402	325
4x4x10	90	11.6	Type 1	AR/AR @ 1064+532 nm	SHG@1064 nm	LBO-301	510
4x4x15	90	11.6	Type 1	AR/AR @ 1064+532 nm	SHG@1064 nm	LBO-302	630
4x4x20	90	11.6	Type 1	AR/AR @ 1064+532 nm	SHG@1064 nm	LBO-303	745
5x5x10	90	11.6	Type 1	AR/AR @ 1064+532 nm	SHG@1064 nm	LBO-501	655
5x5x15	90	11.6	Type 1	AR/AR @ 1064+532 nm	SHG@1064 nm	LBO-503	765
5x5x20	90	11.6	Type 1	AR/AR @ 1064+532 nm	SHG@1064 nm	LBO-502	940
3x3x15	90	0	Type 1	AR/AR @ 1064+532 nm	NCPM SHG@1064 nm, T=149 °C	LBO-404	325
3x3x20	90	0	Type 1	AR/AR @ 1064+532 nm	NCPM SHG@1064 nm, T=149 °C	LBO-405	405
3x3x30	90	0	Type 1	AR/AR @ 1064+532 nm	NCPM SHG@1064 nm, T=149 °C	LBO-409	710
3x3x50	90	0	Type 1	AR/AR @ 1064+532 nm	NCPM SHG@1064 nm, T=149 °C	LBO-410	1300
4x4x10	90	0	Type 1	AR/AR @ 1064+532 nm	NCPM SHG@1064 nm, T=149 °C	LBO-304	510
4x4x15	90	0	Type 1	AR/AR @ 1064+532 nm	NCPM SHG@1064 nm, T=149 °C	LBO-305	630
4x4x20	90	0	Type 1	AR/AR @ 1064+532 nm	NCPM SHG@1064 nm, T=149 °C	LBO-306	745

KTP CRYSTALS

KTP crystals feature the highest efficiency and are suited for low average power or CW lasers applications. These crystals are temperature change insensitive and operate with sharply focused or highly divergent laser beams.

Size, mm	Orientation		Type	Coating	Application	Catalogue number	Price, EUR
	Theta, deg	Phi, deg					
3x3x5	90	23.5	Type 2	AR/AR @ 1064+532 nm	SHG@1064 nm	KTP-401	76
3x3x10	90	23.5	Type 2	AR/AR @ 1064+532 nm	SHG@1064 nm	KTP-402	109
4x4x6	90	23.5	Type 2	AR/AR @ 1064+532 nm	SHG@1064 nm	KTP-403	118
7x7x9	90	23.5	Type 2	AR/AR @ 1064+532 nm	SHG@1064 nm	KTP-404	529

DKDP CRYSTALS

Large aperture DKDP crystals are used for high energy Q-switched lasers with large beam diameters.

Size, mm	Orientation		Type	Coating	Application	Catalogue number	Price, EUR
	Theta, deg	Phi, deg					
15x15x13	36.5	45	Type 1	AR/AR @ 1064/1064+532 nm	SHG@1064 nm	DKDP-401	485
15x15x13	53.5	0	Type 2	AR/AR @ 1064/1064+532 nm	SHG@1064 nm	DKDP-402	485
12x12x20	53,5	0	Type 2	AR/AR @ 1064/1064+532 nm	SHG@1064 nm	DKDP-404	475
15x15x20	53,5	0	Type 2	AR/AR @ 1064/1064+532 nm	SHG@1064 nm	DKDP-405	579

Please contact **EKSMA OPTICS** for special OEM and large volume pricing.

RELATED PRODUCTS

Ovens with thermocontrollers and heaters for different crystal sizes

See pages 2.28–2.30



NONLINEAR CRYSTALS for THG @ 1064 nm

LBO CRYSTALS

Size, mm	Orientation		Type	Coating	Application	Catalogue number	Price, EUR
	Theta, deg	Phi, deg					
3x3x10	42.2	90	Type 2	AR/AR @ 1064+532/355 nm	THG@1064 nm	LBO-406	245
3x3x15	42.2	90	Type 2	AR/AR @ 1064+532/355 nm	THG@1064 nm	LBO-407	325
5x5x15	42.2	90	Type 2	AR/AR @ 1064+532/355 nm	THG@1064 nm	LBO-508	765

DKDP CRYSTALS

Size, mm	Orientation		Type	Coating	Application	Catalogue number	Price, EUR
	Theta, deg	Phi, deg					
12x12x20	59.3	0	Type 2	AR/AR @ 1064+532/355 nm	THG@1064 nm	DKDP-403	475
15x15x20	59.3	0	Type 2	AR/AR @ 1064+532/355 nm	THG@1064 nm	DKDP-406	579

NONLINEAR CRYSTALS for 4HG @ 1064 nm

BBO CRYSTALS

Size, mm	Orientation		Type	Coating	Application	Catalogue number	Price, EUR
	Theta, deg	Phi, deg					
7x7x6	47.6	90	Type 1	P/P @ 532/266 nm	SHG@532 nm	BBO-700	925

KDP CRYSTALS

Size, mm	Orientation		Type	Coating	Application	Catalogue number	Price, EUR
	Theta, deg	Phi, deg					
12x12x5	76.5	45	Type 1	AR/AR @ 532/266 nm	SHG@532 nm	KDP-401	408
15x15x7	76.5	45	Type 1	AR/AR @ 532/266 nm	SHG@532 nm	KDP-402	480

HOUSING ACCESSORIES

Ring Holders
for Nonlinear Crystals
See page 2.26



Positioning Mount
840-0199 for
Nonlinear Crystal
Housing
See page 2.27

