

Polarizing Optics

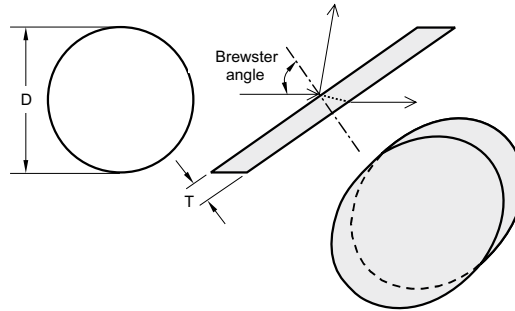
This section describes a group of components which modify the state of polarization of optical radiation. Polarized light carries

valuable information about where the light has been and the various physical parameters which have been acting upon it.

BREWSTER WINDOWS

- Transmit 100% p-polarization components
- Reflect 20% s-polarization components

Brewster windows are intended for high energy laser beams intra cavity usage.



SPECIFICATIONS

Please contact us for other Brewster windows size or precision requirements.

Material	BK7, UV FS
Surface quality	20-10 scratch & dig (MIL-PRF-13830B)
Wavefront distortion	$\lambda/10$ @ 633 nm
Clear aperture	90% of diameter
Parallelism	< 10 arcsec
Axis tolerance	+0.00 -0.12 mm
Thickness tolerance	± 0.2 mm

Catalogue number		Minor axis D,	Thickness	Price, EUR
BK7	UV FS	mm	T, mm	BK7 / UV FS
410-0082	410-1082	8.0	2.0	53 / 70
410-0123	410-1123	12.5	3.0	65 / 87
410-0255	410-1255	25.0	5.0	75 / 145
410-0408	410-1408	40.0	8.0	99 / 195
410-0508	410-1508	50.0	8.0	130 / 250

THIN FILM LASER POLARIZERS

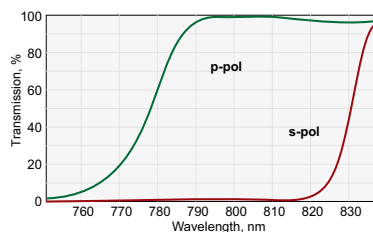
- Provide the achievement of strictly linear polarization of laser radiation
- Utilise the polarization which occurs on reflection from a plane surface

Thin Film Polarizers are designed for use in the most demanding lasers. Due to a high laser damage threshold reaching 10 J/cm^2 @ 1064 nm 8 ns, they are used as an alternative to Glan laser polarizing prisms or cube polarizing beamsplitters.

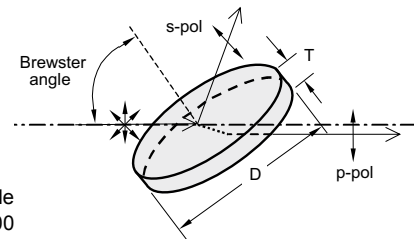
Typical applications are intracavity Q-switch hold-off polarizers or extracavity attenuators for Nd:YAG lasers.

Thin Film Polarizers can be used at an $> 40^\circ$ angle of incidence, but polarization is most efficient and appears in a broad wavelength range at 56° AOI (Brewster angle). Typical polarization ratio T_p/T_s is 200:1.

Standard size is up to $\varnothing 50 \text{ mm}$ (2"), while max. available dimensions are $100 \times 200 \text{ mm}$. For optimal transmission a Thin Film Polarizer should be mounted in an appropriate holder for angular adjustment.



420-0126.
Transmission @ 800 nm, $R_s/T_p > 99.5/95.0 \%$



SPECIFICATIONS

Material	BK7, UV FS
Surface quality	20-10 scratch & dig (MIL-PRF-13830B)
Surface flatness	$\lambda/10$ @ 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
Transmission efficiency	$T_p > 95\%$
Extinction ratio T_p/T_s	>200:1
Laser damage threshold	10 J/cm ² 10 nsec pulse at 1064 nm typical

BK7 Round Thin Film Polarizers

Rs / Tp > 99.5 / 95.0 %

Catalogue number	Diameter D, mm	Thickness T, mm	Wavelength, nm	Price, EUR
420-0114E	12.7	3.0	515	108
420-0124E	12.7	3.0	532	108
420-0125E	12.7	3.0	633	108
420-0127E	12.7	3.0	775	108
420-0126E	12.7	3.0	800	108
420-0136E	12.7	3.0	780-820	160
420-0118E	12.7	3.0	1030	115
420-0138E	12.7	3.0	1010-1050	160
420-0128E	12.7	3.0	1064	115
420-0244E	25.4	3.0	515	128
420-0254E	25.4	3.0	532	128
420-0255E	25.4	3.0	633	128
420-0257E	25.4	3.0	775	128
420-0256E	25.4	3.0	800	128
420-0266E	25.4	3.0	780-820	189
420-0248E	25.4	3.0	1030	155
420-0268E	25.4	3.0	1010-1050	189
420-0258E	25.4	3.0	1064	155
420-0514E	50.8	6.0	515	206
420-0504E	50.8	6.0	532	206
420-0505E	50.8	6.0	633	206
420-0507E	50.8	6.0	775	215
420-0506E	50.8	6.0	800	305
420-0526E	50.8	6.0	780-820	309
420-0518E	50.8	6.0	1030	255
420-0528E	50.8	6.0	1010-1050	335
420-0508E	50.8	6.0	1064	255

BK7 Rectangular Thin Film Laser Polarizers

Rs / Tp > 99.5 / 95.0 %

Catalogue number	Rectangular dimensions		Thickness T, mm	Wavelength, nm	Price, EUR
	Length, mm	Width, mm			
420-0274	28.6	14.3	3.0	515	142
420-0284	28.6	14.3	3.0	532	142
420-0285	28.6	14.3	3.0	633	142
420-0287	28.6	14.3	3.0	775	142
420-0286	28.6	14.3	3.0	800	142
420-0296	28.6	14.3	3.0	780-820	220
420-0278	28.6	14.3	3.0	1030	170
420-0298	28.6	14.3	3.0	1010-1050	220
420-0288	28.6	14.3	3.0	1064	170

HOUSING ACCESSORIES

Adapters for
Polarizer at 56°
840-0117, 840-0118

See page 8.79



Variable Attenuators for
Linearly Polarized Laser Beam
990-0070, -0071

See page 7.13



UV FS Round Thin Film Laser Polarizers

Rs / Tp > 99.5 / 95.0 %

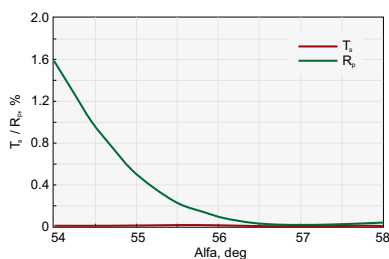
Catalogue number	Diameter D, mm	Thickness T, mm	Wavelength, nm	Price, EUR
420-1110E	12.7	3.0	266	180
420-1112E	12.7	3.0	343	164
420-1122E	12.7	3.0	355	164
420-1123E	12.7	3.0	400	131
420-1114E	12.7	3.0	515	131
420-1124E	12.7	3.0	532	131
420-1126E	12.7	3.0	800	131
420-1136E	12.7	3.0	780-820	196
420-1118E	12.7	3.0	1030	145
420-1138E	12.7	3.0	1010-1050	196
420-1128E	12.7	3.0	1064	145
420-1240E	25.4	3.0	266	200
420-1242E	25.4	3.0	343	182
420-1252E	25.4	3.0	355	182
420-1253E	25.4	3.0	400	154
420-1244E	25.4	3.0	515	154
420-1254E	25.4	3.0	532	154
420-1256E	25.4	3.0	800	154
420-1266E	25.4	3.0	780-820	231
420-1248E	25.4	3.0	1030	180
420-1268E	25.4	3.0	1010-1050	231
420-1258E	25.4	3.0	1064	180
420-1510E	50.8	6.0	266	358
420-1512E	50.8	6.0	343	325
420-1502E	50.8	6.0	355	325
420-1503E	50.8	6.0	400	295
420-1514E	50.8	6.0	515	295
420-1504E	50.8	6.0	532	295
420-1506E	50.8	6.0	800	305
420-1526E	50.8	6.0	780-820	404
420-1518E	50.8	6.0	1030	315
420-1528E	50.8	6.0	1010-1050	404
420-1508E	50.8	6.0	1064	315

UV FS Rectangular Thin Film Laser Polarizers

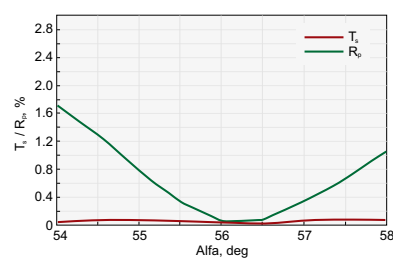
Rs / Tp > 99.5 / 95.0 %

Catalogue number	Rectangular dimensions		Thickness T, mm	Wavelength, nm	Price, EUR
	Length, mm	Width, mm			
420-1270	28.6	14.3	3.0	266	280
420-1272	28.6	14.3	3.0	343	255
420-1282	28.6	14.3	3.0	355	255
420-1283	28.6	14.3	3.0	400	215
420-1274	28.6	14.3	3.0	515	215
420-1284	28.6	14.3	3.0	532	215
420-1286	28.6	14.3	3.0	800	215
420-1296	28.6	14.3	3.0	780-820	315
420-1278	28.6	14.3	3.0	1030	225
420-1298	28.6	14.3	3.0	1010-1050	315
420-1288	28.6	14.3	3.0	1064	225
420-1370	35.0	20.0	3.0	266	322
420-1372	35.0	20.0	3.0	343	293
420-1382	35.0	20.0	3.0	355	293
420-1383	35.0	20.0	3.0	400	247
420-1374	35.0	20.0	3.0	515	247
420-1384	35.0	20.0	3.0	532	247
420-1386	35.0	20.0	3.0	800	247
420-1396	35.0	20.0	3.0	780-820	362
420-1378	35.0	20.0	3.0	1030	259
420-1398	35.0	20.0	3.0	1010-1050	362
420-1388	35.0	20.0	3.0	1064	259

Ultra High Transmission Thin Film Polarizers



420-1254UHT.
Ultra High Transmission @ 532 nm,
 $T_s < 0.2\%$, $R_p < 0.2\%$, AOI = 56°

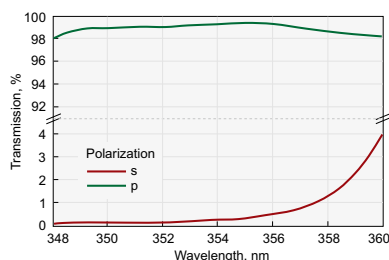


420-1258UHT.
Ultra High Transmission @ 1064 nm,
 $T_s < 0.2\%$, $R_p < 0.2\%$, AOI = 56°

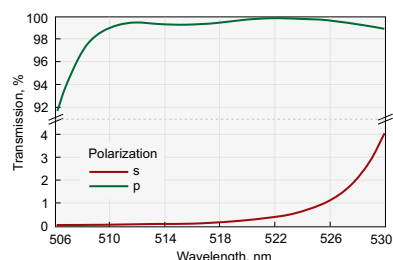
Material – UV FS; $T_s < 0.2\%$, $R_p < 0.2\%$

Catalogue number	Diameter D, mm	Thickness T, mm	Wavelength, nm	Price, EUR
420-1254UHT	25.4	3	532	260
420-1256UHT	25.4	3	800	260
420-1248UHT	25.4	3	1030	304
420-1258UHT	25.4	3	1064	304

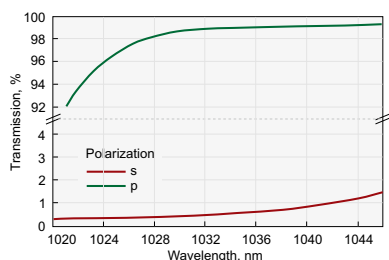
High Transmission Thin Film Polarizers



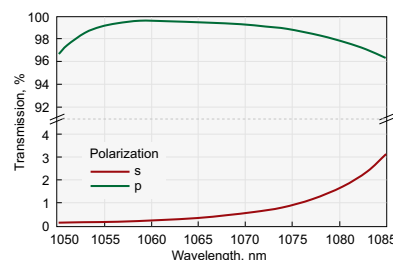
420-1252HT.
High Transmission @ 355 nm,
 $R_s/T_p > 99.5/99.0\%$



420-1244HT.
High Transmission @ 515 nm,
 $R_s/T_p > 99.5/99.0\%$



420-1248HT.
High Transmission @ 1030 nm,
 $R_s/T_p > 99.5/99.0\%$



420-1258HT.
High Transmission @ 1064 nm,
 $R_s/T_p > 99.5/99.0\%$

Material – UV FS; $R_s / T_p > 99.5 / 99.0\%$

Catalogue number	Diameter D, mm	Thickness T, mm	Wavelength, nm	Price, EUR
420-1242HT	25.4	3	343	237
420-1252HT	25.4	3	355	237
420-1244HT	25.4	3	515	200
420-1254HT	25.4	3	532	200
420-1246HT	25.4	3	800	200
420-1248HT	25.4	3	1030	234
420-1258HT	25.4	3	1064	234

RELATED PRODUCTS

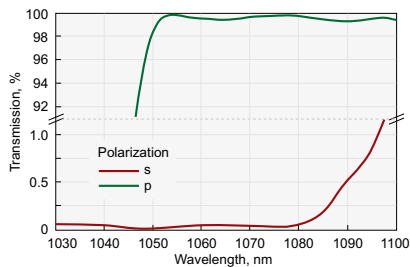
Glan Laser Polarizing Prisms

See page 1.55

Wollaston Prisms

See page 1.57

Thin Film Polarizers with High Extinction Ratio



420-1258HE.
 $T_p > 98\%$, $T_s < 0.1\%$

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

Catalogue number	Diameter D , mm	Thickness T , mm	Wavelength, nm	Price, EUR
420-1242HE	25.4	3	343	218
420-1252HE	25.4	3	355	218
420-1244HE	25.4	3	515	185
420-1254HE	25.4	3	532	185
420-1246HE	25.4	3	800	185
420-1248HE	25.4	3	1030	216
420-1258HE	25.4	3	1064	216

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

Catalogue number	Rectangular dimensions		Thickness T , mm	Wavelength, nm	Price, EUR
	Length, mm	Width, mm			
420-1484HE	20	15	6	532	155
420-1584HE	30	20	6	532	210
420-1478HE	20	15	6	1030	165
420-1578HE	30	20	6	1030	220
420-1488HE	20	15	6	1064	165
420-1588HE	30	20	6	1064	220

HOUSING ACCESSORIES

Adapters for
 Polarizer at 56°
 840-0117, 840-0118
See page 8.79



Variable Attenuators for
 Linearly Polarized Laser Beam
 990-0070, -0071
See page 7.13



COATINGS

WINDOWS & FILTERS

MIRRORS

LENSES

PRISMS

POLARIZING OPTICS

UV & IR OPTICS