

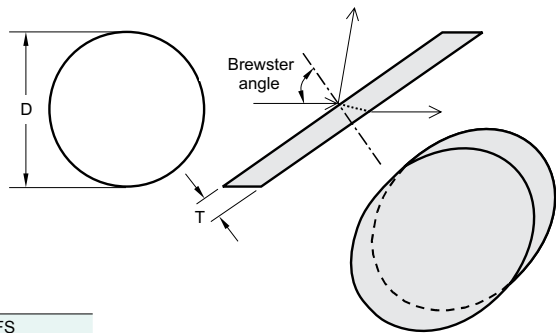
# Polarizing Optics

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	$\pm 0.2$ mm

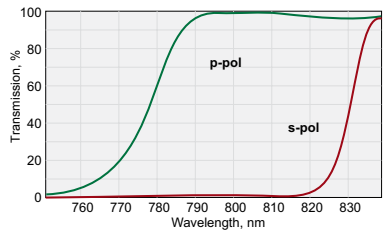
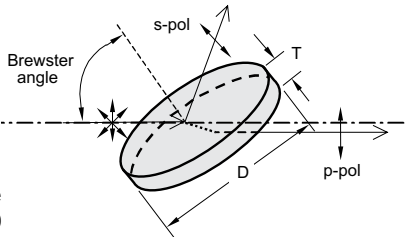
Catalogue number		Minor axis D, mm	Thickness T, mm	Price, EUR BK7 / UV FS
BK7	UV FS			
410-0123	410-1123	12.5	3.0	65 / 87
410-0255	410-1255	25.0	5.0	75 / 145
410-0408	410-1408	40.0	8.0	99 / 195
410-0508	410-1508	50.0	8.0	130 / 250

## THIN FILM LASER POLARIZERS

- Provide the achievement of strictly linear polarization of laser radiator
- 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  $10 \text{ J/cm}^2$  @ 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  $56^\circ$  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	$\pm 0.2$ mm
Transmission efficiency	$T_p > 95\%$
Extinction ratio $T_p/T_s$	>200:1
Laser damage threshold	10 $\text{J/cm}^2$ 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
	Metric	English			
420-0114	12.5	12.7	3.0	515	108
420-0124	12.5	12.7	3.0	532	108
420-0125	12.5	12.7	3.0	633	108
420-0127	12.5	12.7	3.0	775	108
420-0126	12.5	12.7	3.0	800	108
420-0136	12.5	12.7	3.0	780-820	160
420-0118	12.5	12.7	3.0	1030	115
420-0138	12.5	12.7	3.0	1010-1050	160
420-0128	12.5	12.7	3.0	1064	115
420-0244	25.0	25.4	3.0	515	128
420-0254	25.0	25.4	3.0	532	128
420-0255	25.0	25.4	3.0	633	128
420-0257	25.0	25.4	3.0	775	128
420-0256	25.0	25.4	3.0	800	128
420-0266	25.0	25.4	3.0	780-820	189
420-0248	25.0	25.4	3.0	1030	155
420-0268	25.0	25.4	3.0	1010-1050	189
420-0258	25.0	25.4	3.0	1064	155
420-0514	50.0	50.8	6.0	515	206
420-0504	50.0	50.8	6.0	532	206
420-0505	50.0	50.8	6.0	633	206
420-0507	50.0	50.8	6.0	775	215
420-0506	50.0	50.8	6.0	800	305
420-0526	50.0	50.8	6.0	780-820	309
420-0518	50.0	50.8	6.0	1030	255
420-0528	50.0	50.8	6.0	1010-1050	335
420-0508	50.0	50.8	6.0	1064	255

Please add letter M to the catalogue number for metric dimensions and letter E for English.

### 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 8.78



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
	Metric	English			
420-1112	12.5	12.7	3.0	343	164
420-1122	12.5	12.7	3.0	355	164
420-1123	12.5	12.7	3.0	400	131
420-1114	12.5	12.7	3.0	515	131
420-1124	12.5	12.7	3.0	532	131
420-1126	12.5	12.7	3.0	800	131
420-1136	12.5	12.7	3.0	780-820	196
420-1118	12.5	12.7	3.0	1030	145
420-1138	12.5	12.7	3.0	1010-1050	196
420-1128	12.5	12.7	3.0	1064	145
420-1242	25.0	25.4	3.0	343	182
420-1252	25.0	25.4	3.0	355	182
420-1253	25.0	25.4	3.0	400	154
420-1244	25.0	25.4	3.0	515	154
420-1254	25.0	25.4	3.0	532	154
420-1256	25.0	25.4	3.0	800	154
420-1266	25.0	25.4	3.0	780-820	231
420-1248	25.0	25.4	3.0	1030	180
420-1268	25.0	25.4	3.0	1010-1050	231
420-1258	25.0	25.4	3.0	1064	180
420-1512	50.0	50.8	6.0	343	325
420-1502	50.0	50.8	6.0	355	325
420-1503	50.0	50.8	6.0	400	295
420-1514	50.0	50.8	6.0	515	295
420-1504	50.0	50.8	6.0	532	295
420-1506	50.0	50.8	6.0	800	305
420-1526	50.0	50.8	6.0	780-820	404
420-1518	50.0	50.8	6.0	1030	315
420-1528	50.0	50.8	6.0	1010-1050	404
420-1508	50.0	50.8	6.0	1064	315

Please add letter M to the catalogue number for metric dimensions and letter E for English.

### 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			
420-1272	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

COATINGS

WINDOWS & FILTERS

MIRRORS

LENSES

PRISMS

POLARIZING OPTICS

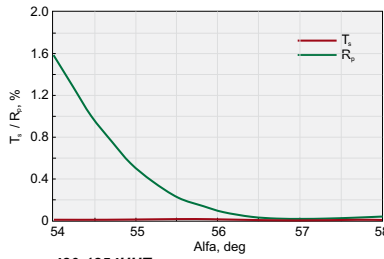
UV & IR OPTICS



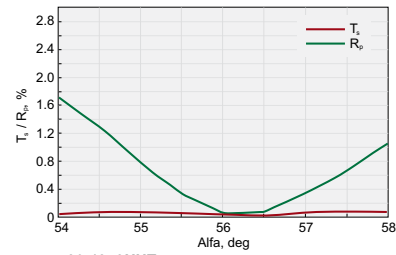
Most of Thin Film Polarizers  
are available for fast  
off-the-shelf delivery.  
Check the availability at  
[www.eksmaoptics.com](http://www.eksmaoptics.com)



## Ultra High Transmission Thin Film Polarizers



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

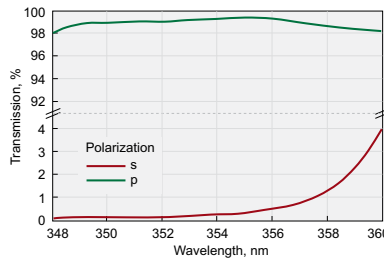


**420-1258UHT.**  
Ultra High Transmission @ 1064 nm,  
 $T_s < 0.2\%$ ,  $R_p < 0.2\%$ , AOI = 56°

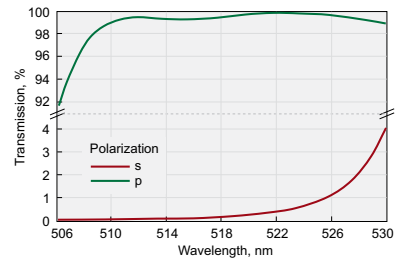
Material – UV FS;  $T_s < 0.2\%$ ,  $R_p < 0.2\%$

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

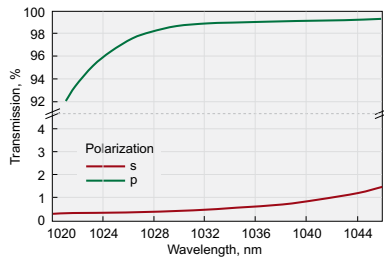
## High Transmission Thin Film Polarizers



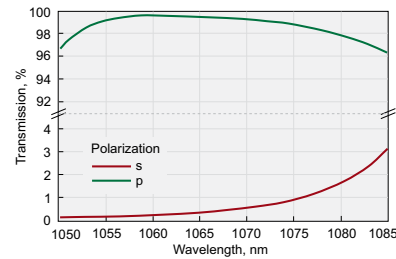
**420-1252HT.**  
High Transmission @ 355 nm,  
 $R_s/T_p > 99.5/99.0\%$



**420-1254HT.**  
High Transmission @ 532 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
420-1248HT	25.4	3	1030	234
420-1258HT	25.4	3	1064	234

### RELATED PRODUCTS

Glan Laser Polarizing Prisms  
See page 1.48

Wollaston Prisms  
See page 1.50

COATINGS

WINDOWS & FILTERS

MIRRORS

LENSES

PRISMS

POLARIZING OPTICS

UV & IR OPTICS