

Broadband DUV Polarizer (200-3300nm)

Polarizer

Leading Manufacturer of Optical Components

Broadband DUV Polarizer (200-3300nm)

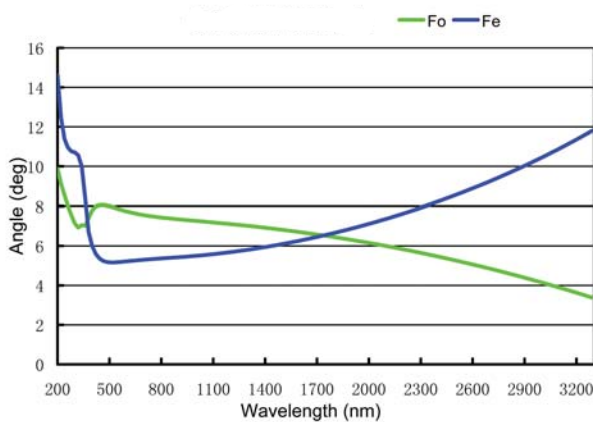
(Foctek Patent NO.: ZL 2005 1 0018753.6)

Broadband Glan Thompson Polarizer is made of two α -BBO prisms cemented together. Unlike other types of α -BBO polarizer and Calcite Polarizer which are used from about 200 nm to 900 nm and 350 nm to 2300 nm respectively, this broadband polarizer has a wide range of wavelength from 200nm to 3300nm.

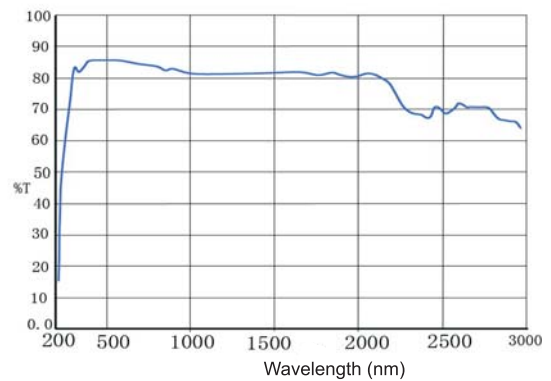
Also the broadband polarizer has a wide acceptance angle whose field angle Fo and Fe is shown in below figure.



Angular Field vs Wavelength



Transmission (T%) vs Wavelength



Specifications

Material	: α -BBO	Flatness	: $\lambda/4@633\text{nm}$
Wavelength Range	: 200-3300 nm	Damage Threshold	: >200 MW/cm ²
Extinction Ratio	: <5x10 ⁻⁶	Coating	: Single Layer MgF ₂
Surface quality	: 20-10	Mount	: Black Anodized Aluminium
Beam Deviation	: < 3 arc minutes		

Standard Products

P/N#	Extinction Ratio	Angular Field (deg)	CA Øa (mm)	O.D.Ød (mm)	L+/-0.1 (mm)	Unit Price
GMP6206	<5x10 ⁻⁶	see above	5.0	15	14.0	\$399.0
GMP6208			7.0	25.4	17.0	\$499.0
GMP6210			9.0	25.4	21.0	\$629.0
GMP6212			11.4	25.4	26.0	\$769.0
GMP6215			13.5	30	31.0	\$959.0
GMP6220			18.0	38	40.0	\$1199.0

Note: Price list is for quantity ≤5 pcs.

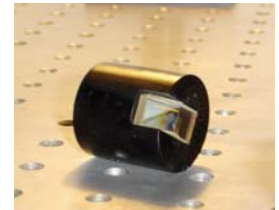
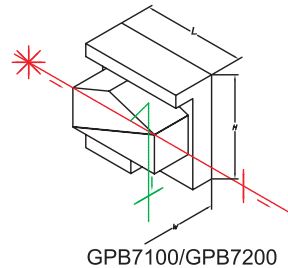
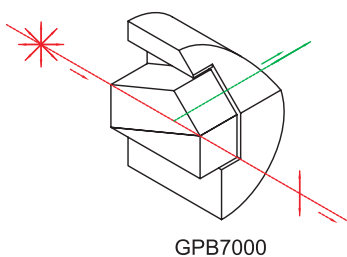
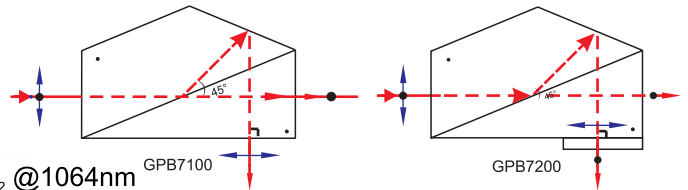
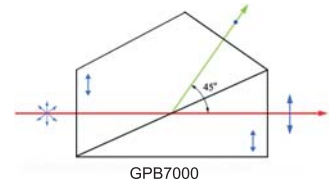
Call for OEM quantity pricing, AR coated and Custom Design Polarizer.

Glan Thompson Polarizing Beamsplitter Cubes

These Glan Thompson polarizers have been arranged to permit the output of the s-polarized beam at 45° or 90° from the straight through p-polarized beam. They provide high polarization purity and high transmission in the two emerging beams. These are useful if it is required to utilize both linear polarization states .

Specifications :

Material	: Calcite
Wavelength Range	: Calcite: 350-2300 nm
Extinction Ratio	: Calcite: $<5 \times 10^{-5}$
Surface quality	: 20-10
Beam Deviation	: < 3 arc minutes
Flatness	: $\lambda/4@633\text{nm}$
Damage Threshold	: $>500 \text{ MW/cm}^2$
Coating	: Single Layer MgF_2 @1064nm
Mount	: Black Anodized Aluminium



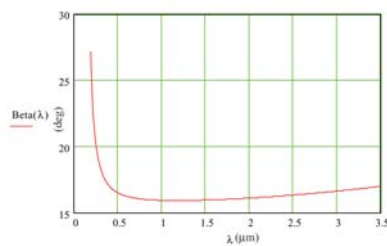
Calcite Glan Thompson Polarizing Beamsplitter Cubes

P/N #	Extinction Ratio	Angular Field (deg)	CA Φa (mm)	O.D. Φd (mm)	L+/-0.1 (mm)	
GPB7006	<5 x 10 ⁻⁵	14°16°	5.0	50.8	33.0	
GPB7008			7.0	50.8	33.0	
GPB7010			9.0	50.8	33.0	
GPB7012			10.8	50.8	33.0	
GPB7015			13.5	50.8	38.0	
P/N #	Extinction Ratio	Angular Field (deg)	W+/-0.1 (mm)	H+/-0.1 (mm)	L+/-0.1 (mm)	CA Φa (mm)
GPB7106	<5 x 10 ⁻⁵	14°16°	12.0	16.0	16.0	5.0
GPB7108			16.0	20.0	22.0	7.0
GPB7110			20.0	25.0	26.0	9.0
GPB7112			20.0	30.0	34.0	10.8
GPB7115			25.0	35.0	40.0	13.5
GPB7206	<5 x 10 ⁻⁵	14°16°	12.0	16.0	16.0	5.0
GPB7208			16.0	20.0	22.0	7.0
GPB7210			20.0	25.0	26.0	9.0
GPB7212			20.0	30.0	34.0	10.8
GPB7215			25.0	35.0	40.0	13.5

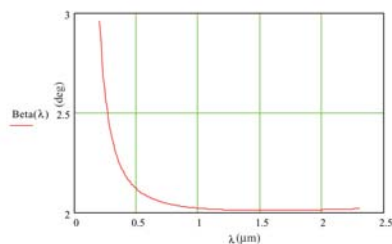
Wollaston Polarizer

Wollaston polarizer is made of two birefringent material prisms that are cemented together. The deviations of the ordinary and extraordinary beams are nearly symmetrical about the input beam axis, so that the Wollaston polarizing beam splitter has approximately twice the deviation of the Rochon. The separation angle exhibits chromatic dispersion, as shown in the blow. Any separation angle can be designed upon the requirement. The separation angle of standard products vs wavelength is shown in the plot below.

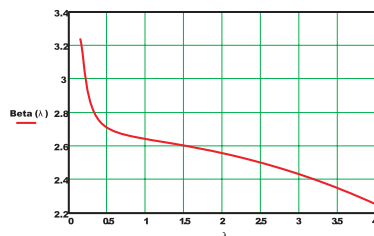
Separation Angle of Standard Products vs wavelength



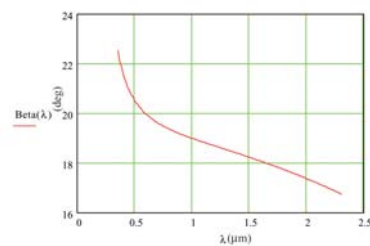
α -BBO: 190-3500 nm



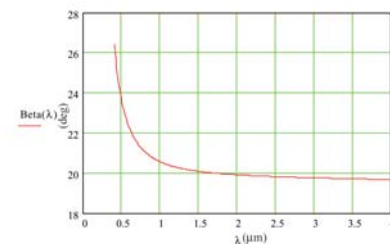
Quartz: 200-2300 nm



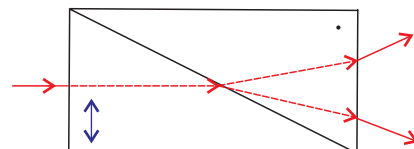
MgF₂: 200-4000 nm



Calcite: 350-2300nm

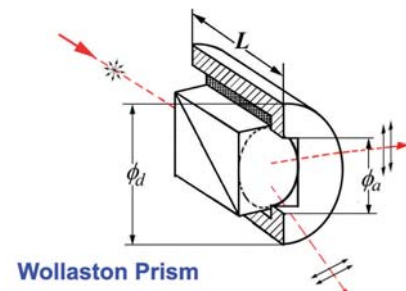
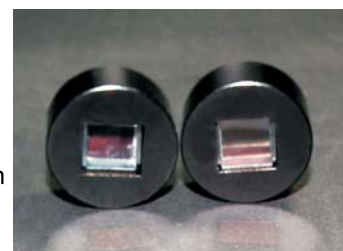


YVO₄: 400-4000nm



Specifications:

Material	: α -BBO, Calcite, YVO ₄ , Quartz
Wavelength Range	: α-BBO : 200-3500 nm, Calcite : 350-2300 nm YVO ₄ : 400-5000 nm, Quartz: 200-2300 nm MgF ₂ : 130-6000 nm
Extinction Ratio	: Calcite, Quartz : $<5 \times 10^{-5}$; α-BBO, YVO₄, MgF₂ : $<5 \times 10^{-6}$
Surface quality	: 20-10
Flatness	: $\lambda/4@633\text{nm}$
Damage Threshold	: $>500 \text{ MW/cm}^2$
Coating	: Single Layer MgF ₂
Mount	: Black Anodized Alum



Wollaston Prism

WSP Separation Angle

	WSP5000	WSP6000	WSP7000	WSP8000	WSP9000
	MgF ₂	α -BBO	Calcite	YVO ₄	Quartz
130	2.80				
150	3.24				
170	3.19				
190	3.11	27.18			
200	3.07	25.00			2.93
266	2.89	19.39			2.47
355	2.78	17.45	22.39		2.23
400	2.75	17.01	21.54	26.33	2.18
532	2.70	16.38	20.28	22.93	2.08
633	2.68	16.17	19.80	21.87	2.05
800	2.66	16.00	19.35	20.99	2.02
808	2.66	15.99	19.34	20.96	2.02
980	2.64	15.93	19.02	20.53	2.00
1064	2.64	15.91	18.88	20.40	2.00
1319	2.62	15.92	18.50	20.14	1.99
1550	2.60	15.96	18.14	20.00	1.99
2000	2.56	16.10	17.36	19.86	2.00
2500	2.50	16.33	16.30	19.77	2.00
3000	2.43	16.63		19.71	
4000	2.25	17.44		19.62	
5000	2.01	18.56		19.54	
6000	1.70				

1. α -BBO Wollaston Polarizer

P/N #		Extinction Ratio	Separation Angle (deg)	CA Φ a (mm)	O.D. Φ d (mm)	L \pm 0.1 (mm)	Unit Price
WSP6006	190-3500 (Single Layer MgF ₂) (Coating@800nm)	<5 x 10 ⁻⁶	15°-27° 16°@800nm	5.0	15.0	9.0	\$259.0
WSP6008				7.0	25.4	11.0	\$336.0
WSP6010				9.0	25.4	13.0	\$439.0
WSP6015				13.5	30.0	18.0	\$649.0
WSP6020				18.0	38.0	24.0	\$959.0

Note: Price list is for quantity ≤ 5 pcs.

Call for OEM quantity pricing, AR coated and Custom Design Polarizer.

2. Calcite Wollaston Polarizer

P/N #		Extinction Ratio	Separation Angle (deg)	CA Φ_a (mm)	O.D. Φ_d (mm)	L \pm 0.1 (mm)	Unit Price
WSP7006	350-2300 (Single Layer MgF ₂) (Coating@980nm)	<5 x 10 ⁻⁵	16.7°-22.5° 19°@980nm	5.0	15.0	9.0	\$169.0
WSP7008				7.0	25.4	11.0	\$218.0
WSP7010				9.0	25.4	13.0	\$266.0
WSP7015				13.5	30.0	18.0	\$419.0
WSP7020				18.0	38.0	24.0	\$739.0

3. YVO₄ Wollaston Polarizer

P/N #		Extinction Ratio	Separation Angle (deg)	CA Φ_a (mm)	O.D. Φ_d (mm)	L \pm 0.1 (mm)	Unit Price
WSP8006	400~4000 (Single Layer MgF ₂) (Coating@1550nm)	<5 x 10 ⁻⁶	19.6°-23.3° 20°@1550nm	5.0	15.0	8.0	\$219.0
WSP8008				7.0	25.4	10.0	\$259.0
WSP8010				9.0	25.4	12.0	\$349.0
WSP8015				13.5	30.0	16.0	\$489.0
WSP8020				18.0	38.0	21.0	\$859.0

4. Quartz Wollaston Polarizer

P/N #	Wavelength Range(nm)	Extinction Ratio	Separation Angle (deg)	CA Φ_a (mm)	O.D. Φ_d (mm)	L \pm 0.1 (mm)	Unit Price
WSP9006	200~2300 (Single Layer MgF ₂) (Coating@1064nm)	<5 x 10 ⁻⁵	2°-3° 2°@1064nm	5.0	15.0	14.0	\$149.0
WSP9008				7.0	25.4	18.0	\$199.0
WSP9010				9.0	25.4	22.0	\$249.0
WSP9015				13.5	30.0	32.0	\$359.0
WSP9020				18.0	38.0	44.0	\$539.0

5. MgF₂ Wollaston Polarizer

P/N #		Extinction Ratio	Separation Angle (deg)	CA Φ_a (mm)	O.D. Φ_d (mm)	L \pm 0.1 (mm)	Unit Price
WSP5006	130~6000 Design: 532nm	<5 x 10 ⁻⁶	2.7° @532nm	5.0	15.0	14.0	\$379.0
WSP5008				7.0	25.4	18.0	\$479.0
WSP5010				9.0	25.4	22.0	\$579.0
WSP5015				13.5	30.0	32.0	\$779.0
WSP5020				18.0	38.0	44.0	\$1099.0

Note: Price list is for quantity ≤5 pcs.

Call for OEM quantity pricing, AR coated and Custom Design Polarizer.

A wide variety of custom design Wollaston Polarizer are available upon request

Custom Designed Separation Angle at Certain Wavelength is available upon request

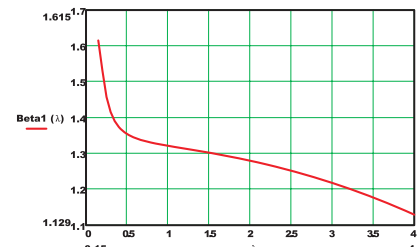
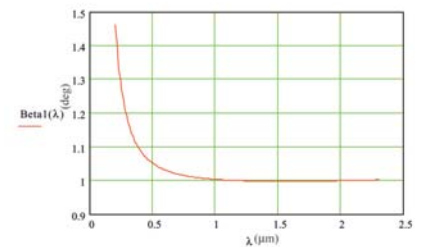
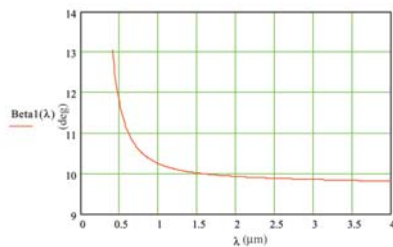
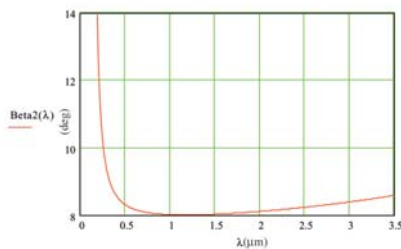
Custom-size Mounter is available upon request.

AR coated Polarizer is available upon request

Rochon Polarizer

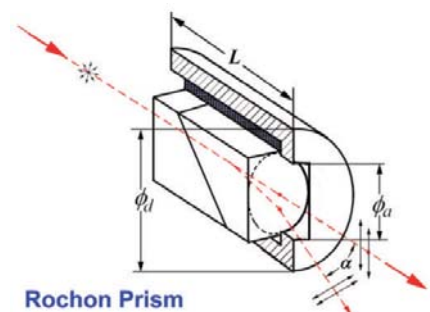
Rochon polarizer is one of the earliest designs, which is made of two birefringent material prisms cemented together. Both ordinary and extraordinary beams propagate collinearly down the optic axis in the first prism under the ordinary refractive index. Upon entering the second prism the ordinary beam experiences the same refractive index and continues undeviated. The extra-ordinary beam, however, now has a lower refractive index and is refracted at the interface. The angle of refraction is further increased at the birefringent material/air exit surface. Any separation angle can be designed for specific wavelength upon the requirement. The separation angle of standard products vs wavelength is shown in the plot below.

Separation Angle of Standard Products vs wavelength



Specifications:

Material	: α -BBO, MgF ₂ , YVO ₄ , Quartz
Wavelength Range	: α -BBO: 190-3500 nm MgF ₂ : 130-6000 nm YVO ₄ : 400-4000 nm, Quartz: 200-2300 nm
Extinction Ratio	: Quartz: $<5 \times 10^{-5}$; α -BBO, YVO ₄ , MgF ₂ : $<5 \times 10^{-6}$
Surface quality	: 20-10
Beam Deviation	: < 3 arc minutes
Flatness	: $\lambda/4@633\text{nm}$
Damage Threshold	: $>500 \text{ MW/cm}^2$
Coating	: Single Layer MgF ₂
Mount	: Black Anodized Alum



RCP Separation Angle

	RCP5000	RCP6000	RCP8000	RCP9000
	MgF ₂	α -BBO	YVO ₄	Quartz
130	1.40			
150	1.62			
170	1.59			
190	1.55	13.93		
200	1.53	12.78		1.46
266	1.44	9.82		1.23
355	1.39	8.80		1.12
400	1.37	8.58	13.09	1.09
532	1.35	8.25	11.45	1.04
633	1.34	8.14	10.93	1.03
808	1.33	8.05	10.50	1.01
980	1.32	8.02	10.29	1.00
1064	1.32	8.00	10.22	1.00
1319	1.31	8.01	10.09	1.00
1550	1.30	8.03	10.03	1.00
2000	1.28	8.11	9.96	1.00
2500	1.25	8.23	9.91	
3000	1.22	8.39	9.88	
4000	1.13	8.83	9.83	
5000	1.01	9.43	9.79	
6000	0.85			

1. α -BBO Rochon Polarizer

P/N #	Wavelength Range(nm)	Extinction Ratio	Separation Angle (deg)	CA Φ a (mm)	O.D. Φ d (mm)	L \pm 0.1 (mm)	Unit Price
RCP6006	190~3500 (Single Layer MgF ₂) (Coating@800nm)	<5 x 10 ⁻⁶	8.0°-14° 8.05°@800nm	5.0	15.0	8.0	\$299.0
RCP6008				7.0	25.4	11.0	\$369.0
RCP6010				9.0	25.4	13.0	\$499.0
RCP6015				13.5	30.0	18.0	\$699.0
RCP6020				18.0	38.0	22.0	\$999.0

Note: Price list is for quantity <=5 pcs.

Call for OEM quantity pricing, AR coated and Custom Design Polarizer.

2. Quartz Rochon Polarizer

P/N #	Wavelength Range(nm)	Extinction Ratio	Beam Deviation Angle (deg)	CA Φa (mm)	O.D. Φd (mm)	L+/-0.1 (mm)	Unit Price
RCP9006	200~2300 (Single Layer MgF ₂) (Coating@1064nm)	$<4 \times 10^{-5}$	1.0°-1.5° 1°@1064nm	5.0	15.0	16.0	\$199.0
RCP9008				7.0	25.4	20.0	\$259.0
RCP9010				9.0	25.4	25.0	\$339.0
RCP9015				13.5	30.0	35.0	\$449.0
RCP9020				18.0	38.0	45.0	\$599.0

3. YVO₄ Rochon Polarizer

P/N #	Wavelength Range(nm)	Extinction Ratio	Separation Angle (deg)	CA Φa (mm)	O.D. Φd (mm)	L+/-0.1 (mm)	Unit Price
RCP8006	400~4000 (Single Layer MgF ₂) (Coating@1550nm)	$<5 \times 10^{-6}$	9.8°-13.0° 10°@1550nm	5.0	15.0	8.0	\$249.0
RCP8008				7.0	25.4	11.0	\$329.0
RCP8010				9.0	25.4	13.0	\$419.0
RCP8015				13.5	30.0	18.0	\$559.0
RCP8020				18.0	38.0	22.0	\$889.0

4. MgF₂ Rochon Polarizer

P/N #	Wavelength Range(nm)	Extinction Ratio	Separation Angle (deg)	CA Φa (mm)	O.D. Φd (mm)	L+/-0.1 (mm)	Unit Price
RCP5006	130~6000 (Uncoating)	$<5 \times 10^{-5}$	1.35°@532nm	5.0	15.0	16.0	\$229.0
RCP5008				7.0	25.4	20.0	\$309.0
RCP5010				9.0	25.4	25.0	\$399.0
RCP5015				13.5	30.0	35.0	\$559.0
RCP5020				18.0	38.0	45.0	\$879.0

Note: Price list is for quantity ≤5 pcs.

Call for OEM quantity pricing, AR coated and Custom Design Polarizer.

A wide variety of custom design Rochon Polarizer are available upon request.

Custom Designed Separation Angle at Certain Wavelength is available upon request.

Custom-size Mounter is available upon request.

AR coated Polarizer is available upon request.

Broadband Polarization Beam Combiner

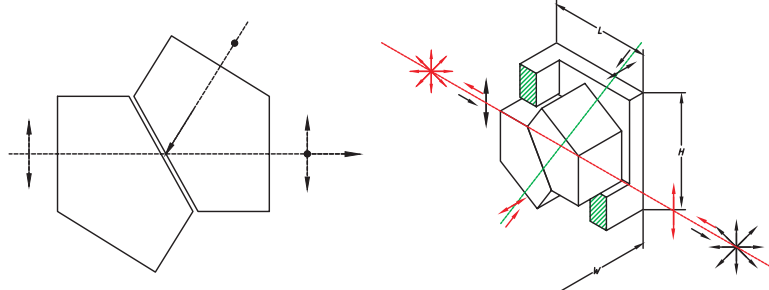
The Polarization Beam Combiner is made of two pieces YVO₄ Prism or Calcite Prism. The Calcite Polarization combiner can be with 45° or 90° of two polarization Beam Input. Please refer to Glan Thompson Beamsplitter Cube (Page 53), The Glan Thompson Beamsplitter made of calcite can also work as polarization Beam combiner. But since it is glue cemented, the damage threshold is lower. While we specially design the air spaced Polarization Beam combiner, which is made of YVO₄. The Angle between two input polarization beam is 100.6 deg. All the input & output surfaces are optical polished and coated.

Features:

- Air Spaced.
- High Damaged threshold.
- Broad Band for 400-5000 nm.

Specifications:

Material	: YVO ₄
Wavelength Range	: 400-5000 nm,
Surface quality	: 40/20
Beam Deviation	: < 3 arc minutes
Flatness	: $\lambda/4@633\text{nm}$
Damage Threshold	: >500 MW/cm ²
Coating	: Single layer MgF ₂ @ 1064 nm
Mount	: Black Anodized Aluminium



Standard Products:

P/N #	Wavelength Range (nm)	CA Φa (mm)	W+/-0.1 (mm)	H+/-0.1 (mm)	L+/-0.1 (mm)	Unit Price
PBC8006	400-5000 (Single Layer MgF ₂) (Coating@1550nm)	5.0	15.0	15.0	15.0	\$399.0
PBC8008		7.0	15.0	20.0	18.0	\$499.0
PBC8010		9.0	20.0	25.0	22.0	\$599.0
PBC8012		11.0	20.0	30.0	25.0	\$699.0
PBC8015		13.5	25.0	35.0	30.0	\$829.0

Note: Price list is for quantity ≤5 pcs.

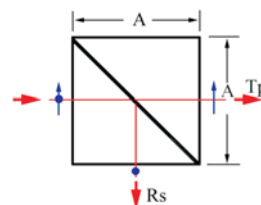
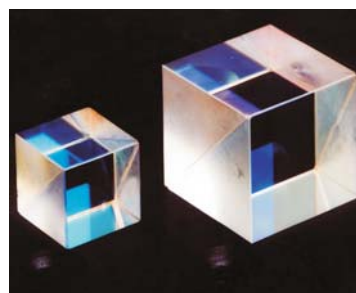
Call for OEM quantity pricing, AR coated and Custom Design Polarizer.

Polarization Beamsplitter Cube

Polarization Beamsplitters Cube split randomly polarized beams into two orthogonal, linearly, polarized components-S-polarized light is reflected at a 90deg. Angle while P-polarized light is transmitted. Each beamsplitter consists of a pair of precision high tolerance right angle prisms cemented together with a dielectric coating on the hypotenuse of one of prisms.

Specification

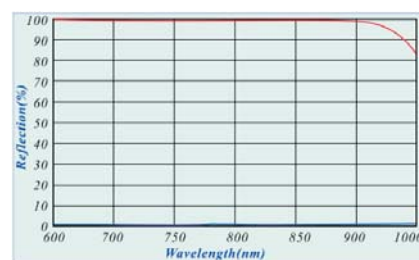
Dimension Tolerance:----- $\pm 0.2\text{mm}$
 Flatness: ----- $\lambda/4@632.8\text{nm}$
 Surface Quality: -----60-40 scratch and dig
 Beam Deviation: ----- <3 arc minutes
 Extinction Ratio: ----- $>100:1$
 Principal Transmittance: ----- $T_p > 95\%$ and $T_s < 1\%$ *
 Principal Reflectance: ----- $R_s > 99\%$ and $R_p < 5\%$
 Coating: Hypotenuse Face: -----Polarization Beamsplitter Coating
 All Input and Output Faces: -----AR Coating
 * Principal Transmittance for 450~680nm: ----- $T_{p_avg} > 95\%$ (Broadband)



Narrowband

Material: ----- N-BK7 or H-K9L Grade A optical glass
 Standard wavelength: ----- 488, 532, 633, 850, 980, 1064, 1310, 1550 nm

Size(mm)	Part No.	Unit Price
3.2x3.2x3.2	PBS1101	\$49.0
5x5x5	PBS1102	\$49.0
10x10x10	PBS1103	\$49.0
12.7x12.7x12.7	PBS1104	\$49.0
15x15x15	PBS1105	\$59.0
20x20x20	PBS1106	\$69.0
25.4x25.4x25.4	PBS1107	\$79.0



$R_s > 99\%$, $R_p < 5\%$ @650-850nm

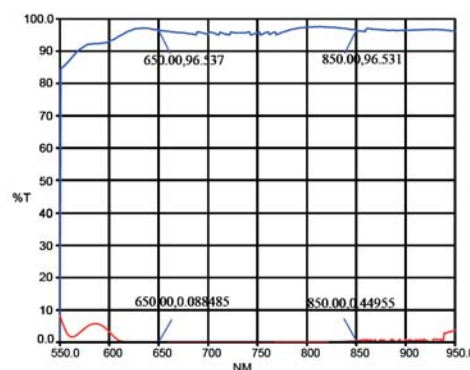
Broadband

Material: -----N-SF₂ or H-ZF₁ optical glass

* Material for PBS(450-680nm) is H-ZF₂ (N-SF₅)

Coating wavelength: 450-680, 650-850, 900-1200, 1250-1570, 1500-1610 nm

Size(mm)	Part No.	Unit Price
3.2x3.2x3.2	PBS5201	\$59.0
5x5x5	PBS5202	\$59.0
10x10x10	PBS5203	\$59.0
12.7x12.7x12.7	PBS5204	\$59.0
15x15x15	PBS5205	\$69.0
20x20x20	PBS5206	\$79.0
25.4x25.4x25.4	PBS5207	\$89.0



$T_p > 95\%$, $T_s < 1\%$ @650-850nm

Ordering Information

Part No. - Wavelength

For Example, PBS5201 - 1500-1610nm

Polarization Beamsplitter Cube 3.2x3.2x3.2mm, 1500-1610nm broadband coating

High Extinction Polarization Cube BeamSplitter

$T_P : T_S > 1000:1$ for Broad band

$T_P : T_S > 3000:1$ for Narrow band

Specification

Dimension Tolerance: ----- ±0.2mm

Flatness: ----- $\lambda/4@632.8\text{nm}$

Surface Quality: ----- 60-40 scratch and dig

Beam Deviation:----- <3 arc minutes

Extinction Ratio:----- Tp : Ts > 1000:1 for Broadband

$T_p : T_s > 3000:1$ for Narrowband

Principal Transmittance: ----- Tp>90% for Broadband*

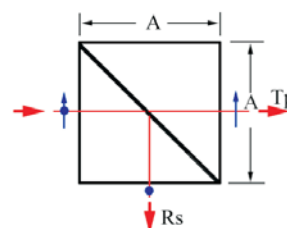
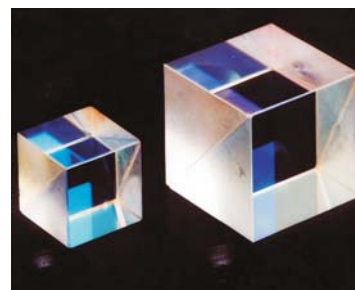
Tp>96% for Narrowband

Principal Reflectance: ----- $R_s > 99.5\%$

Coating: Hypotenuse Face: ----- Polarization Beamsplitter Coating

All Input and Output Faces: ----- AR Coating

* Principal Transmittance for 450~680nm: ----- Tp avg>90% (Broadband)

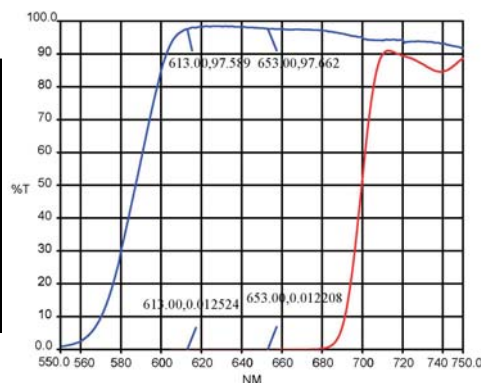


Narrowband

Material: ----- N-BK7 or H-K9L Grade A optical glass

Standard wavelength: ----- 532, 633, 980, 1064 nm (other wavelength is available upon request)

Size(mm)	Part No.	Unit Price
3.2x3.2x3.2	PBS1301	\$69.0
5x5x5	PBS1302	\$69.0
10x10x10	PBS1303	\$89.0
12.7x12.7x12.7	PBS1304	\$99.0
15x15x15	PBS1305	\$119.0
20x20x20	PBS1306	\$139.0
25.4x25.4x25.4	PBS1307	\$149.0



Broadband

Material: ----- N-SF₂ or H-ZF₁ optical glass

* Material for PBS(450-650nm) is H-ZF2 (N-SF5)

Coating wavelength: 450-650, 650-850, 900-1200 nm (other wavelength is available upon request)

Size(mm)	Part No.	Unit Price
3.2x3.2x3.2	PBS5301	\$89.0
5x5x5	PBS5302	\$89.0
10x10x10	PBS5303	\$119.0
12.7x12.7x12.7	PBS5304	\$129.0
15x15x15	PBS5305	\$149.0
20x20x20	PBS5306	\$159.0
25.4x25.4x25.4	PBS5307	\$169.0

PBS@633 20nm, $T_p > 96\%$, $T_p:T_s > 3000:1$

Ordering Information

Part No. - Wavelength

For Example, PBS5301 - 900-1200nm

High Extinction PBS 3.2x3.2x3.2mm, 900-1200nm broadband coating

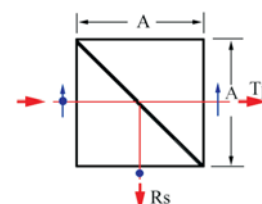
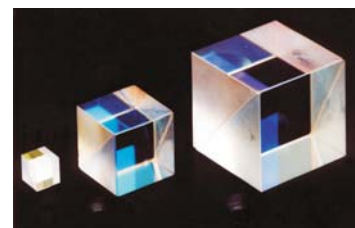
High Power Polarization Cube BeamSplitter

High Power PBS

High Damage Threshold: -----10J/cm²@1064nm 20ns, 20Hz for Narrowband
 10J/cm²@1064nm 20ns, 20Hz for Broadband

Specification

Dimension Tolerance: ----- 0.2mm
 Flatness: ----- $\lambda/4$ @632.8nm
 Surface Quality: ----- 60-40 scratch and dig
 Beam Deviation: -----<3 arc minutes
 Extinction Ratio: -----TP : TS > 1000:1
 Principal Transmittance: -----Tp>90% for Broadband *
 Tp>95% for Narrowband
 Principal Reflectance: -----Rs>99.5%
 Coating: Hypotenuse Face: ----- Polarization Beamsplitter Coating
 All Input and Output Faces: -----AR Coating
 * Principal Transmittance for 450~680nm: -----Tp_avg>90% (Broadband)



Narrowband

Material: ----- N-BK7 or H-K9L Grade A optical glass
 Standard wavelength: ----- 532, 633, 1064 nm (other wavelength is available upon request)

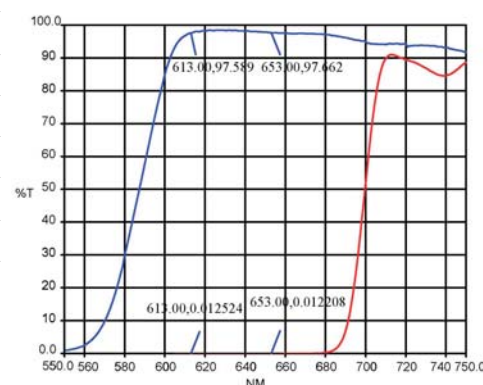
Size(mm)	Part No.	Unit Price
3.2x3.2x3.2	PBS1401	\$85
5x5x5	PBS1402	\$85
10x10x10	PBS1403	\$160
12.7x12.7x12.7	PBS1404	\$200
15x15x15	PBS1405	\$280

Broadband

Material: ----- N-SF₂ or H-ZF₁ optical glass

* Material for PBS(450-650nm) is H-ZF₂ (N-SF₅)

Coating wavelength: 450-650, 650-850, 900-1200 nm (other wavelength is available upon request)



PBS@633 20nm, Tp>96%, Tp:Ts>3000:1

Size(mm)	Part No.	Unit Price
3.2x3.2x3.2	PBS5401	\$95
5x5x5	PBS5402	\$95
10x10x10	PBS5403	\$180
12.7x12.7x12.7	PBS5404	\$220
15x15x15	PBS5405	\$300

Ordering Information

Part No. - Wavelength

For Example, PBS1401 - 1064nm, It is for High Power PBS 5x5x5mm, 1064nm narrowband coating

Depolarizer

There is often circumstance when a plane-polarized beam can be undesirable, as for instance, with a polarization sensitive instrument such as a reflecting spectrometer. A depolarizer will change this beam into a pseudo-depolarized beam by scrambling up the polarization

Quartz Silica Wedge Depolarizer

This DQW series of depolarizer consists of a crystalline quartz wedge together with a compensating fused silica wedge to correct the angular deviation. The optic axis of the quartz wedge lies in the plane of the wedge and at 45 deg to the input polarization. The result is then a variable retardation plate over the aperture, which produces depolarization for all wavelengths. So, this DQW depolarizer is thus effective with monochromatic light.

Standard Specifications:

Spectral rang (nm): ----- 220-1100, 1100-2600

Diamter tolerance: ----- +0.0/-0.2 mm

Surface Quality: ----- 60/40

Flatness @ 632.8nm: ----- $\lambda/8$

Parallelism: ----- <1 min

Chip: ----- <0.2 mm

Chamfer (bevel): ----- <0.5 mm x 45 deg

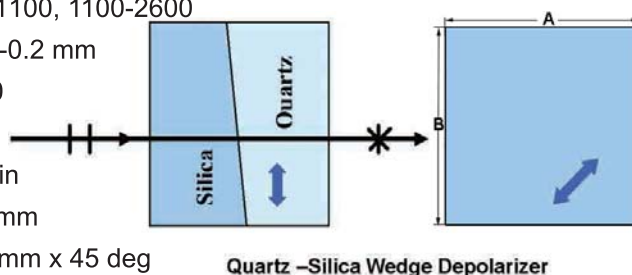
Peak transmission (%): ----- 92 (Uncoated)

Coating: ----- uncoated

Mountter: ----- unmounted

Max peak power (MW/cm²): ----- 300

Max cw power (W/cm²): ----- 100



Coating: MgF₂, Narrow Band or Broad Band AR coating is available.

Mounter: Black anodized aluminum ring is available. To order mounted depolarizers, simply add the Suffix M to the part no.

P/N#	Size (mm) A = B	CA Φa (mm)	Thickness (mm)
DQW10	10.0	9.0	5
DQW12	12.7	11.5	5
DQW15	15.0	13.5	5
DQW20	20.0	18.5	5
DQW25	25.4	22.0	5

Advanced Quartz Lyot Depolarizer

This DAQ series of depolarizers is an improved Quartz Lyot Depolarizer, which consists of two quartz crystal wedges with their optic axes lying in the plane of the plates, and aligned at 45° with each other. It has the advantages of both Lyot and Wedge Depolarizer. One plate of the two quartz wedge is exactly twice the thickness of the other. The result is then a variable retardation plate over the aperture, which produces depolarization for all wavelengths. By this specially designed structure, we can get much better depolarization result than DQL and DQW type.

This DAQ depolarizer is also effective with monochromatic light.

Standard Specifications:

Spectral rang (nm): ----- 220-1100, 1100-2600

Diamter tolerance: ----- +0.0/-0.2 mm

Surface Quality: ----- 60/40

Flatness @ 632.8nm: ----- $\lambda/8$

Parallelism: ----- <1 min

Beam deviation: ----- <3 min

Chip: ----- <0.2 mm

Chamfer (bevel): ----- <0.5 mm x 45 deg

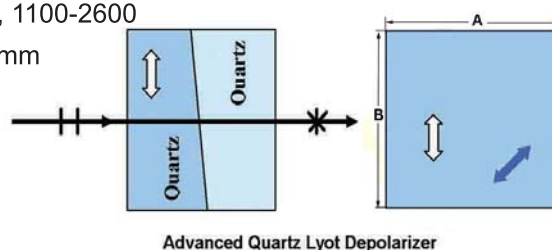
Peak transmission (%): ----- 92 (Uncoated)

Coating: ----- uncoated

Mountter: ----- unmounted

Max peak power (MW/cm²): ----- 300

Max cw power (W/cm²): ----- 100



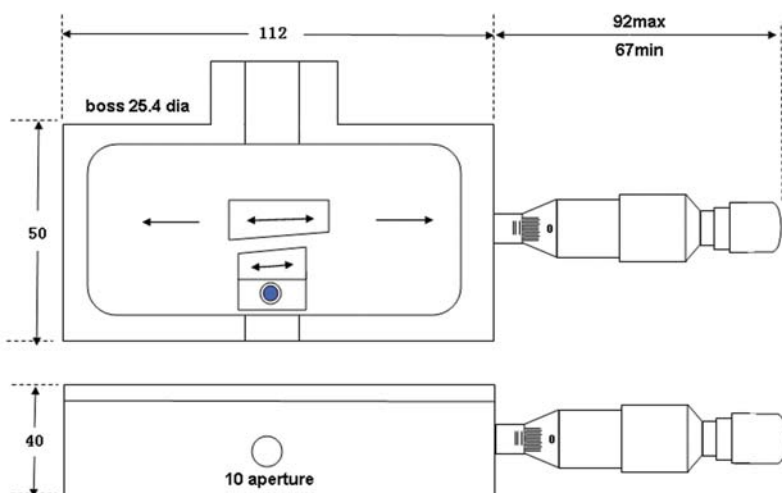
Coating: MgF₂, Narrow Band or Broad Band AR coating is available.

Mounter: Black anodized aluminum ring is available. To order mounted depolarizers, simply add the Suffix M to the part no.

P/N#	Size (mm) A = B	CA Φa (mm)	Thickness (mm)
DAQ10	10.0	9.0	12.15
DAQ12	12.7	11.5	12.15
DAQ15	15.0	13.5	12.15
DAQ20	20.0	18.5	12.15
DAQ25	25.4	22.0	12.15

Babinet Compensator

This precision optical instrument is invaluable for the complete analysis of polarized light. There are two models available-Model BSC 100 fabricated from synthetic crystal quartz which spans from 190-1600nm and Model BSC 100F in magnesium fluoride which covers from 120nm-7.5 μ m.



Theory

The BSC 100 Babinet Soleil Compensator is constructed from two opposed crystal quartz wedges with a compensating quartz block in optical contact with the smaller wedge as shown below.

Both wedges are cut with the quartz optic axis parallel to their long edges, and the compensating block has its axis at right angles. In operation, the large wedge is translated across the smaller, thus presenting a variable path length difference to an optical beam passing through the instrument. The compensating block ensures that this difference is uniform across the aperture.

The Compensator is aligned so that its axis lies at 45° to the polarization direction of the input beam. This beam can be considered to be resolved into two components lying parallel to the quartz fast and slow (optic) axes. On emerging from the Compensator, each component now has a differential phase retardation dependent upon the optical path length difference through the quartz. Adjusting this path length difference by translating the large wedge varies the retardation in direct proportion.

The wedge angle is calculated such that full scale movement (up or down) from centre zero introduces a half wave retardation (plus or minus) at the longest design wavelength (1600nm for model BSC100 or 7.5 μ m for Model BSC 100F). Because the retardation scales inversely with wavelength for a given path difference, operation at shorter wavelengths results in a full scale translation producing more than one half wave retardation. For the BSC100 at 100nm, there are approximately 2.75 half waves per full scale.

Model BSC100

This Compensator, using synthetic crystal quartz elements, is designed for use over the wavelength range 190-1600nm, covering the most popular laser wavelengths from Nd:YAG 4th harmonic @ 266nm to GaInAsP @ 1550nm. The Compensator is factory preset for zero retardation at the micrometer range centre (0.500"), and we supply a calibration curve for the calculation of retardation vs micrometer setting at any wavelength within 300-1600nm. Note that the Compensator functions as a zero order retardation plate when used at micrometer settings between center zero (0.500") and the first half wave retardation setting (positive or negative).

Model BSC100F

This Compensator, using magnesium fluoride elements, is designed for use over the wavelength range 120nm-7.5µm, covering the vacuum ultra violet through to the visible band. The Compensator is factory reset for zero retardation at the micrometer range center (0.500"), and we supply a calibration curve for the calculation of retardation vs micrometer setting at any wavelength within 120nm-7.5µm.

Specifications:

Aperture(mm): -----10
BSC100 design range(nm): ----- 190-1600 (Quartz)
BSC100F design range(nm): ----- 120-7500(MgF₂)
Retardation range: ----- +/-180°
Calibration accuracy: ----- +/-1°

MOUNTING

All Compensators are fitted with a 1" diameter boss to interface to any 1" bore optical mount.

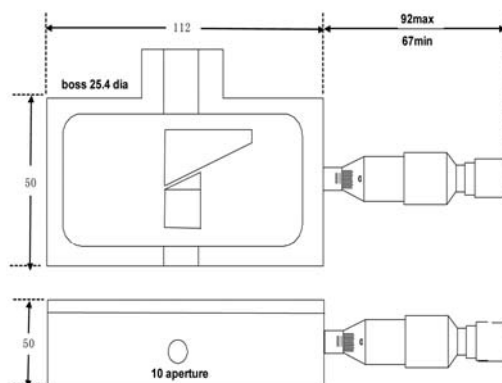
Variable Rotator

This useful instrument introduces a variable rotation between 0° and 90° to an input plane polarized beam. The rotation angle is controlled by a manually driven precision micrometer. Calibration scales are supplied to enable any desired rotation to be set for a given wavelength of operation.

Theory

The VR100 Variable Rotator is constructed from two left rotating opposed crystal quartz wedges with a compensating right-rotating crystal block in optical contact with the smaller wedge. Both wedges and the compensating block are cut with the optic axis parallel to the beam propagation direction. In operation, the large wedge is translated across the smaller, thus presenting a variable amount of left rotation to an optical beam passing through the Instrument. The compensating block introduces the exact opposite right rotation when the instrument is set at the zero position.

The input beam propagates through both wedges, and suffers a rotation of its plane of polarization proportional to the difference in thickness between the two combined wedges and the compensating



Model VR100

This rotator using natural optically active crystal quartz element is designed for use over the wavelength range 230nm-1100nm, covering the most popular laser wavelengths from Nd:YAG 4th harmonic @ 266nm to the fundamental @ 1064nm. The variable rotator is factory preset for zero rotation at the micrometer zero position, and we supply a calibration curve for the calculation of rotation vs micrometer setting at any wavelength within 230nm-1100nm.

Note that this variable rotator is completely linear: i.e. at a given wavelength, rotation scales in direct proportion to the micrometer reading.

Specifications:

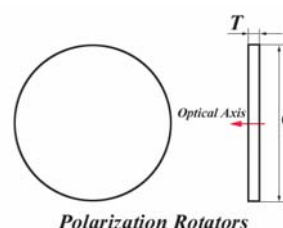
Aperture (mm): ----- 10
 Spectral Range (nm): ----- 230-1100
 Rotation range: ----- 0° - 90°
 Calibration accuracy: ----- $\pm 1^\circ$

Polarization Rotator

Polarization rotators offer 45° or 90° rotation at a number of common laser wavelength, the optical axis in a polarization rotator is perpendicular to the polished face of the optic. The result is that the orientation of input linearly polarized light is rotated as it propagates through the device.

Specifications:

Material	:	Optical Grade Crystal Quartz
Wavelength Range	:	440-1600 nm
Parallelism	:	<10 arc seconds
Diameter Tolerance	:	+0.0, -0.2
Surface Quality	:	20-10
Retardation Accuracy	:	< 5 minutes
Wavefront Distortion	:	$\lambda/4@633\text{nm}$
Clear Aperture	:	Central 90%
AR Coated	:	<0.2% @ central wavelength
Rotation Orientation	:	Counter-clockwise



Standard Wavelength: 532nm, 632.8nm, 1064nm,

Rotator P/N#	Diameter (mm)	Rotation (Deg)	Price/pc in US\$ for different pcs range			
			qty≤5	5<qty≤10	10<qty≤20	qty>20
WPR4512	12.7	45	\$49	\$41	\$34	RFQ
WPR4515	15	45	\$55	\$46	\$39	RFQ
WPR4520	20	45	\$63	\$53	\$45	RFQ
WPR4525	25.4	45	\$69	\$59	\$49	RFQ
WPR9012	12.7	90	\$69	\$59	\$48	RFQ
WPR9015	15	90	\$63	\$53	\$44	RFQ
WPR9020	20	90	\$69	\$59	\$49	RFQ
WPR9025	25.4	90	\$79	\$69	\$58	RFQ

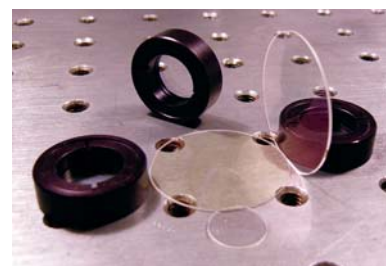
Note: “RFQ” stands for “Request For Quoting”.

Call for price of OEM quantity, Custom-made WPR.

Waveplate

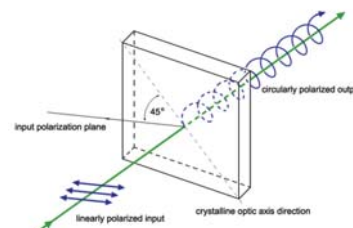
Waveplate is an optics in which the polished faces contain the optical axis. All light incidents normal to the surface are composed of components polarized parallel and perpendicular to the axis. In such a device, light polarized parallel to the axis will propagate slower than light polarized perpendicular to the axis. As the light propagates through the optic, the phase shift between the two components increases with thickness. The phase shift is called the retardance. The most popular retarders are quarter and half wave.

With an appropriate choice of thickness, any degree of retardance may be achieved at any wavelength for which quartz is transparent. However, the minimum thickness necessary to achieve a mechanically strong part corresponds to several full waves of retardance.



Quarter Waveplate

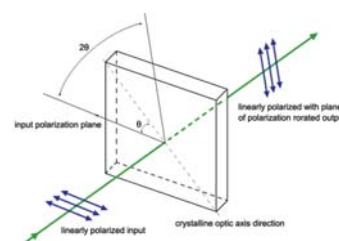
When linearly polarized light is input at 45deg to the axis of a quarter waveplate, the output is circularly polarized, similarly, input circularly polarized light is transformed into linearly polarized light.



Quarter Waveplate

Half Waveplate

A half waveplate rotates linearly polarized light to any desired orientation. The rotation angle is twice the angle between the incident polarized light and optical axis.



Half Waveplate

Zero Order Waveplate

The zero order waveplate is designed to give a retardance of zero full waves, plus the desired fraction. Zero order waveplate shows better performance than multiple order waveplates, it has broad bandwidth and a lower sensitivity to temperature and wavelength changes. It should be considered for more critical applications.

Specifications:

Material	: Quartz
Parallelism	: <3 arc second(General), <1 arc second(High Precision)
Diameter Tolerance	: +0.0, -0.2
Surface quality	: 20-10
Wavefront Distortion	: $\lambda/8@633\text{nm}$
Clear aperture	: Central 90%
AR Coated	: <0.2% @ wavelength
Holder	: See page 118 in Part 6
Retardation Tolerance	: See below table

Wavelength Range(nm)	< 400	532-632.8	780-980	1064	>1310
Retardation Tolerance	< $\lambda/100$	< $\lambda/200$	< $\lambda/300$	< $\lambda/400$	< $\lambda/500$

Foctek provides standard waveplate wavelengths (nm) listed as below.

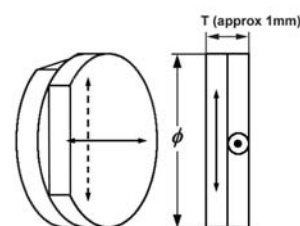
266	355	400	532	632.8	780	800	808	850	980	1064	1310	1480	1550
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Note: Other wavelengths within the ranger of 200-2300nm are also available upon request.

Zero Order Waveplate - Cemented by Epoxy

This type of zero order waveplate is constructed of two multiple order waveplates with their axes crossed. Thus, the effect of the first plate is canceled by the second, except for the residual difference between them.

- ◆Cemented by Epoxy
- ◆ AR Coated, $R < 0.2\%$
- ◆Better Temperature Bandwidth
- ◆Wide Wavelength Bandwidth



Quarter Waveplate P/N #	Half Waveplate P/N #	Diameter (mm)	Price/pc in US\$ for different pcs range			
			qty≤5	5<qty≤10	10<qty≤20	qty>20
WPC210Q	WPC210H	10	\$49	\$39	\$29	RFQ
WPC212Q	WPC212H	12.7	\$55	\$45	\$35	RFQ
WPC215Q	WPC215H	15	\$59	\$49	\$39	RFQ
WPC220Q	WPC220H	20	\$69	\$59	\$49	RFQ
WPC225Q	WPC225H	25.4	\$79	\$69	\$59	RFQ
WPC230Q	WPC230H	30	\$99	\$89	\$65	RFQ

Note: "RFQ" stands for "Request For Quoting".