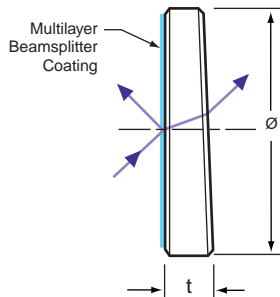
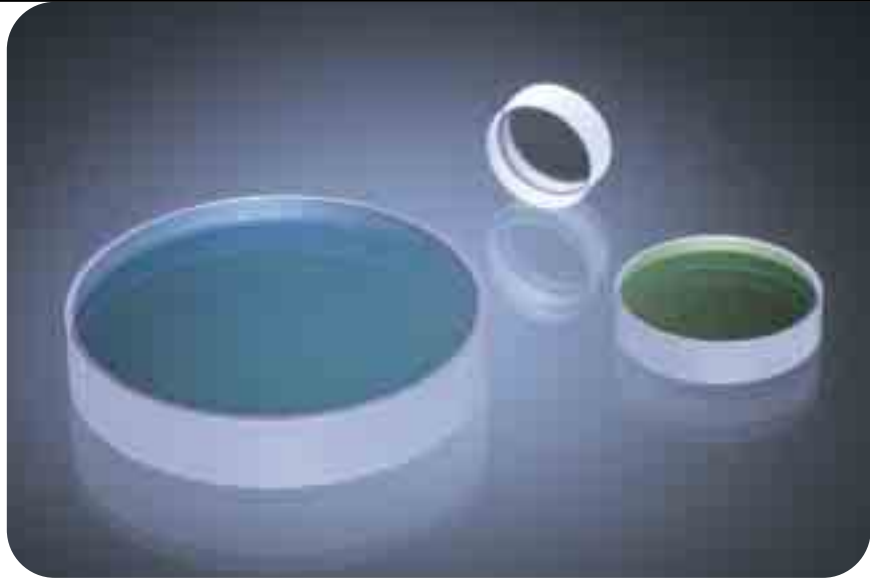


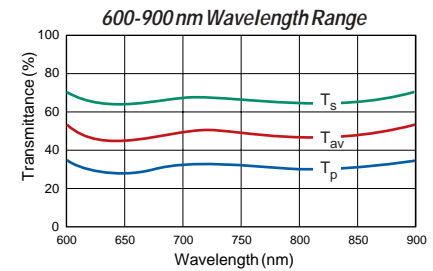
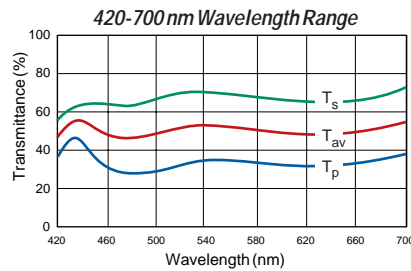
# Broadband Plate Beamsplitters

- 50:50 split
- Ideal for CW tunable lasers or laser diodes
- Laser quality substrates



These thin film beamsplitters are designed to work at 45 degree incidence and to provide an equal split between the transmitted and reflected beams over broad wavebands. The multilayer

dielectric splitter coating is deposited on a laser grade optical substrate with a wedge to eliminate errors from back surface reflections.



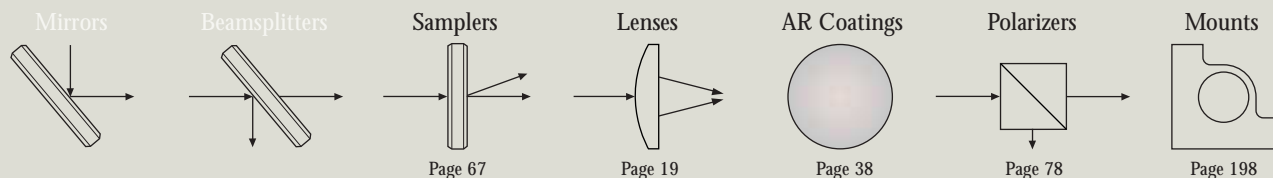
## Specifications

**Material:** BK7 glass  
**Diameter Tolerance:** +0 -0.2mm  
**Flatness:**  $\lambda/10$   
**Parallelism:** 30  $\pm$ 5 arcmin  
**Surface Quality:** 10-5  
**Clear Aperture:** 90% diameter  
**Reflectance:** R = T = 50%  $\pm$ 10%  
**Polarization:** |s-p| <35%  
**Angle of Incidence:** 45 deg

## Broadband Plate Beamsplitters

Catalog Number	Waveband (nm)	Diameter, $\varnothing$ (mm)	Thickness, t (mm)	Price US
44-2186	420-700	25.4	6.0	\$210.00
44-2194	420-700	50.8	10.0	\$325.00
44-2228	600-900	25.4	6.0	\$210.00
44-2236	600-900	50.8	10.0	\$325.00
44-2269	800-1200	25.4	6.0	\$210.00
44-2277	800-1200	50.8	10.0	\$325.00

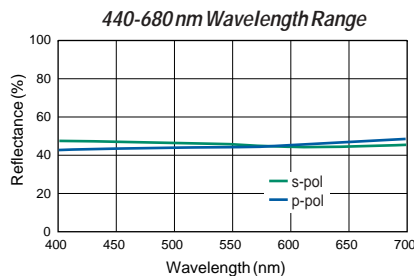
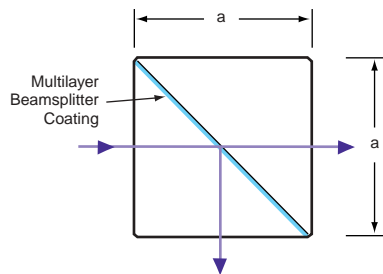
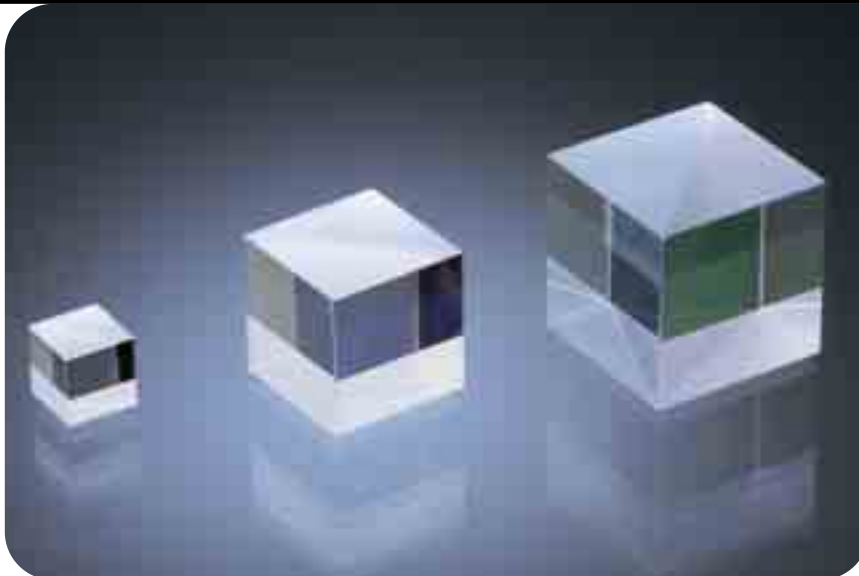
## Broadband Laser Optics



- Optics
  - Lenses & Microscope Components
  - Coatings
  - Mirrors, Beamsplitters & Windows
  - Prisms & Polarizers
  - Filters
  - Pinholes
- Opto-mechanics
  - Tables, Breadboards & Rails
  - Mounting Hardware
  - Mirror & Component Mounts
  - Manual Micro-positioners
  - Motorized Positioners
- Lasers & Accessories
  - Beam Delivery
  - Laser Measurement
  - Diode Laser Modules

# Broadband Hybrid Cube Beamsplitters

- Ideal for CW tunable lasers, laser diodes, or broadband light sources
- Durable and easy to use
- Non-polarizing



These beamsplitter cubes use a hybrid (metal/dielectric) beamsplitter coating to achieve a remarkable degree of uniformity over a broad spectral range while limiting the polarizing tendencies of metal films. They are commonly used for low power applications where the slight amount of absorption by the film will not cause a problem.

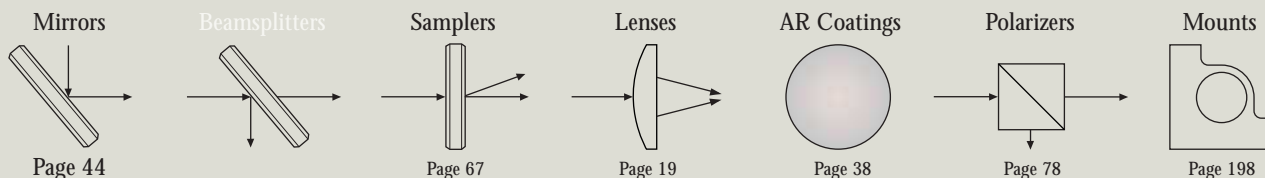
## Specifications

**Material:** BK7 glass  
**Dimensions Tolerance:** +0 -0.2mm  
**Flatness:**  $\lambda/8$  at 633 nm  
**Beam deviation:** <3 arcmin  
**Surface quality:** 20-10  
**Clear aperture:** 80% side  
**Absorption:** <10%  
**Reflection:** 45%  $\pm$ 5%  
**Transmission:** 45%  $\pm$ 5%  
**Polarization:** |s-p|<5%  
**Laser Damage Threshold**  
**CW:** 1 kW/cm<sup>2</sup>  
**Pulsed (10 ns):** 1 J/cm<sup>2</sup>  
**AR Coating:** R  $\leq$  0.5% per surface

## Broadband Hybrid Cube Beamsplitters

Wavelength (nm)	Side, a (mm)	Catalog Number	Price US
440-680	12.7	44-3622	\$145.00
440-680	25.4	44-3663	\$205.00
600-1000	12.7	44-3705	\$145.00
600-1000	25.4	44-3747	\$205.00
900-1400	12.7	44-3788	\$145.00
900-1400	25.4	44-3820	\$205.00
1200-1600	12.7	44-3861	\$145.00
1200-1600	25.4	44-3903	\$205.00

## Broadband Laser Optics



# Non-polarizing Gas Laser Plate Beamsplitters

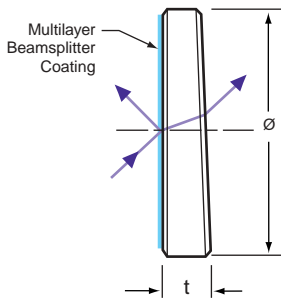
- Optimized 50:50 split at the design wavelength
- Non-polarizing
- Laser quality substrates



- Optics
- Lenses & Microscope Components
- Coatings
- Mirrors, Beamsplitters & Windows
- Prisms & Polarizers
- Filters
- Pinholes

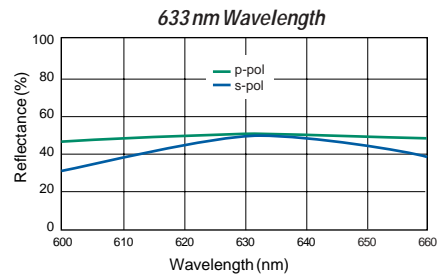
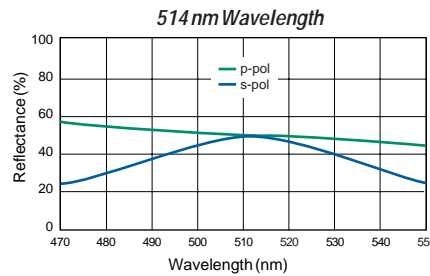
- Opto-mechanics
- Tables, Breadboards & Rails
- Mounting Hardware
- Mirror & Component Mounts
- Manual Micro-positioners
- Motorized Positioners

- Lasers & Accessories
- Beam Delivery
- Laser Measurement
- Diode Laser Modules



These thin film gas laser beamsplitters are designed to work at 45 degree incidence and to provide an equal and non-polarized split between the transmitted and reflected beams for specific laser wavelengths (the curves indicate the bandwidth over which these

are non-polarizing). They will not work effectively at other wavelengths or angles of incidence. The multilayer dielectric splitter coating is deposited on a laser grade optical substrate with a wedge to eliminate errors from back surface reflections.



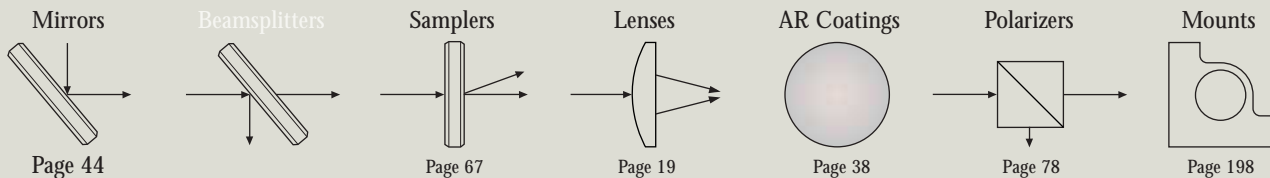
## Specifications

- Material:** BK7 glass
- Diameter Tolerance:** +0 -0.2 mm
- Flatness:**  $\lambda/10$
- Parallelism:** 30  $\pm$  5 arcmin
- Surface Quality:** 10-5
- Clear Aperture:** 90% diameter
- Reflectance:** 50  $\pm$  5%
- Transmission:** 50  $\pm$  5%
- Polarization:** |s-p| < 5%
- Angle of Incidence:** 45 deg
- AR Coating:** R  $\leq$  0.5% on second surface

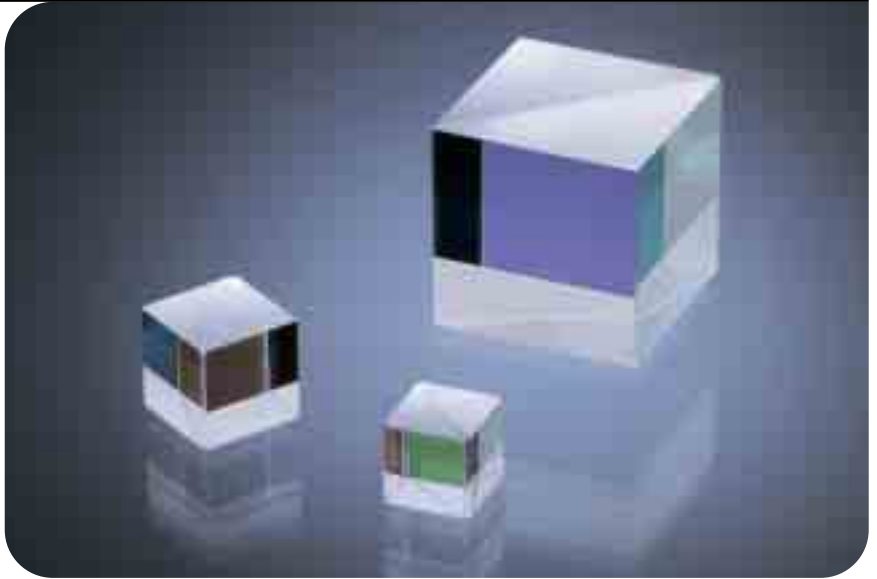
## Non-polarizing Gas Laser Plate Beamsplitters

Catalog Number	Laser Type	Wavelength (nm)	Diameter, Ø (mm)	Thickness, t (mm)	Price US
44-1501	Ar Ion	488	25.4	6.0	\$230.00
44-1519	Ar Ion	488	50.8	10.0	\$330.00
44-1543	Ar Ion	514	25.4	6.0	\$230.00
44-1550	Ar Ion	514	50.8	10.0	\$330.00
44-1626	HeNe	633	25.4	6.0	\$230.00
44-1634	HeNe	633	50.8	10.0	\$330.00

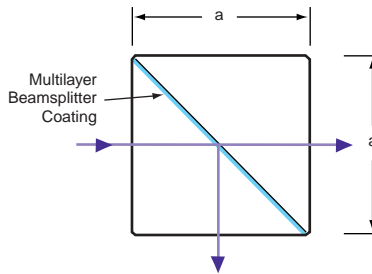
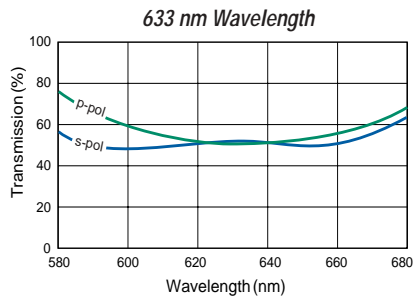
## Gas Laser Optics



# Non-polarizing Gas Laser Cube Beamsplitters



- 50:50 split
- Durable and easy to use
- Non-polarizing



These gas laser cube beamsplitters provide polarization insensitive splitting of laser beams. The beamsplitter coatings are specifically designed for use at a particular wavelength and will not work at other wavelengths. Entrance and exit faces are antireflection coated.

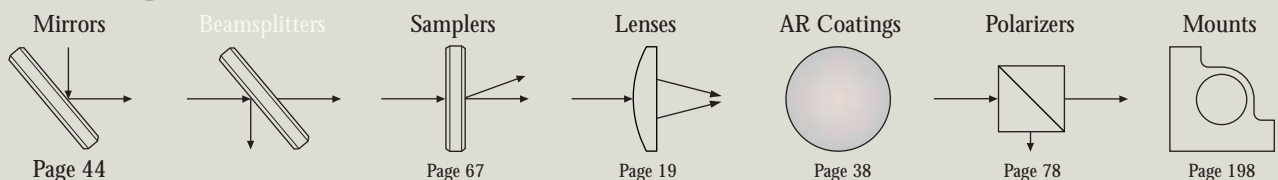
## Specifications

**Material:** BK7 glass  
**Dimensions Tolerance:** +0 -0.2 mm  
**Flatness:**  $\lambda/8$  at 633 nm  
**Beam Deviation:** <3 arcmin  
**Surface Quality:** 20-10  
**Clear Aperture:** 80% side  
**Reflection:** 50%  $\pm 5\%$   
**Transmission:** 50%  $\pm 5\%$   
**Polarization:** |s-p| <5%  
**Laser Damage Threshold**  
**CW:** 2 kW/cm<sup>2</sup>  
**Pulsed (10ns):** 1 J/cm<sup>2</sup>  
**AR Coating:** R  $\leq$  0.25% per surface

## Non-polarizing Gas Laser Cube Beamsplitters

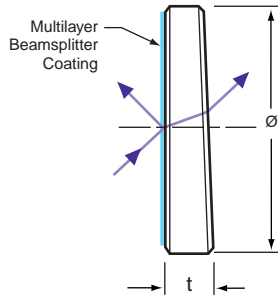
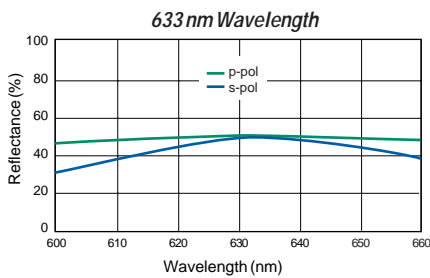
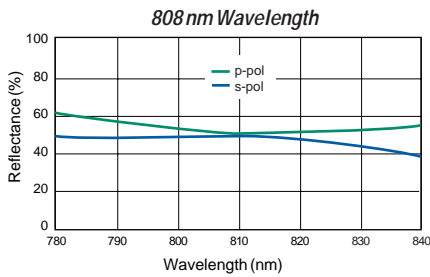
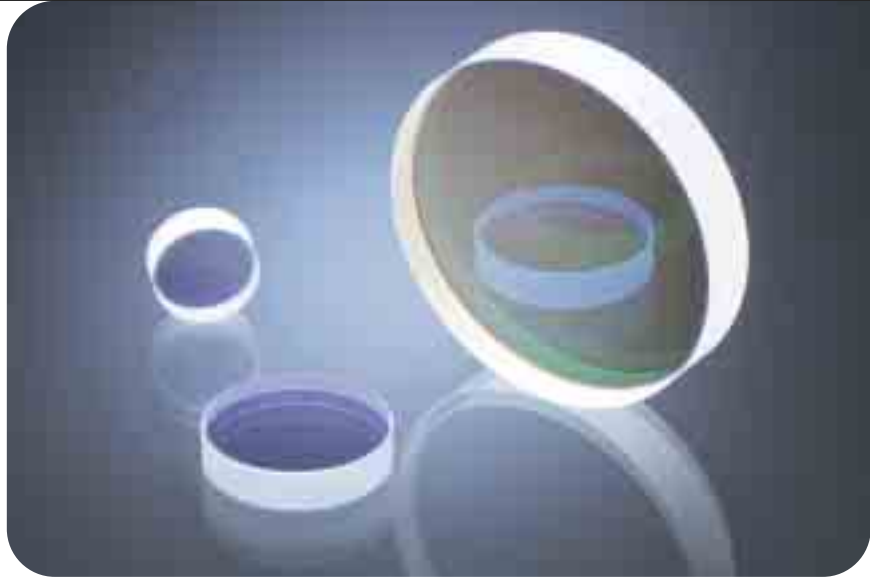
Laser Type	Wavelength (nm)	Side, a (mm)	Catalog Number	Price US
HeCd	325	12.7	44-2541	\$370.00
HeCd	325	25.4	44-2582	\$510.00
Ar Ion	488	12.7	44-2780	\$210.00
Ar Ion	488	25.4	44-2822	\$285.00
Ar Ion	514	12.7	44-2863	\$210.00
Ar Ion	514	25.4	44-2905	\$285.00
He Ne	633	12.7	44-2947	\$210.00
He Ne	633	25.4	44-2988	\$285.00

## Gas Laser Optics



# Non-polarizing Diode Laser Plate Beamsplitters

- 50:50 split
- Non-polarizing
- Laser quality substrates



These thin film beamsplitters are designed to work at 45 degrees incidence and to provide an equal split between the transmitted and reflected beams for specific diode laser wavebands. They do not affect the state of polarization of the input beam. The multilayer dielectric splitter coating is deposited on a laser grade optical substrate with a wedge to eliminate errors from back surface reflections.

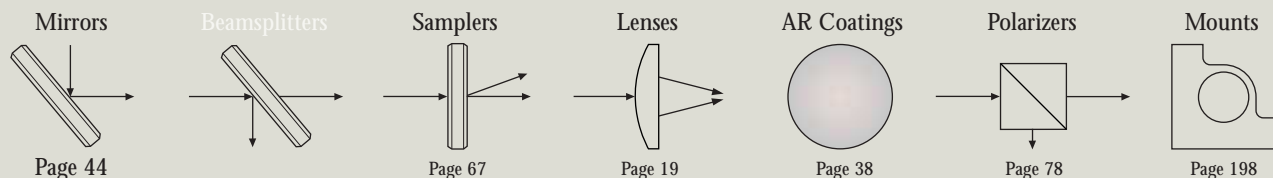
## Specifications

**Material:** BK7 glass  
**Diameter Tolerance:** +0 -0.2 mm  
**Flatness:**  $\lambda/10$   
**Parallelism:** 30  $\pm$  5 arcmin  
**Surface Quality:** 10-5  
**Clear Aperture:** 90% diameter  
**Reflectance:** 50  $\pm$  5%  
**Transmission:** 50%  $\pm$  5%  
**Polarization:** |s-p| < 5%  
**Angle of Incidence:** 45°  
**AR Coating:** R  $\leq$  0.5% on second surface

## Non-polarizing Diode Laser Plate Beamsplitters

Catalog Number	Wavelength (nm)	Diameter, Ø (mm)	Thickness, t (mm)	Price US
44-1626	633	25.4	6.0	\$230.00
44-1634	633	50.8	10.0	\$330.00
44-1667	650	25.4	6.0	\$230.00
44-1675	650	50.8	10.0	\$330.00
44-1709	670	25.4	6.0	\$230.00
44-1717	670	50.8	10.0	\$330.00
44-1741	808	25.4	6.0	\$230.00
44-1758	808	50.8	10.0	\$330.00
44-1782	980	25.4	6.0	\$230.00
44-1790	980	50.8	10.0	\$330.00

## Diode Laser Optics



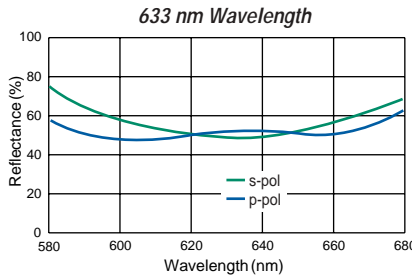
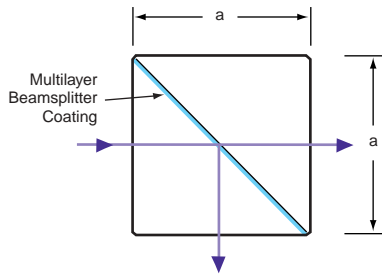
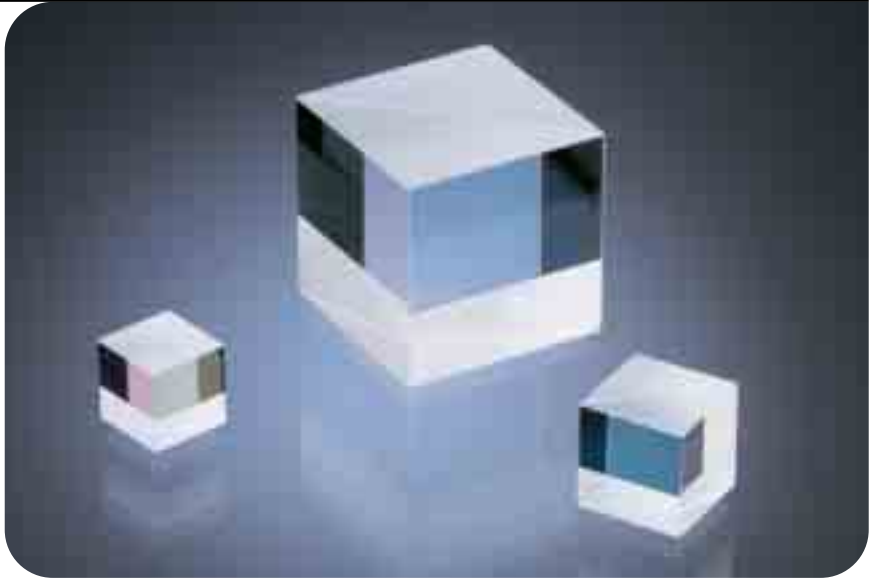
- Optics
- Lenses & Microscope Components
- Coatings
- Mirrors, Beamsplitters & Windows
- Prisms & Polarizers
- Filters
- Pinholes

- Opto-mechanics
- Tables, Breadboards & Rails
- Mounting Hardware
- Mirror & Component Mounts
- Manual Micro-positioners
- Motorized Positioners

- Lasers & Accessories
- Beam Delivery
- Laser Measurement
- Diode Laser Modules

# Non-polarizing Diode Laser Cube Beamsplitters

- 50:50 split ratio
- Durable and easy to use
- Non-polarizing



These cube beamsplitters provide polarization insensitive splitting of diode laser beams.

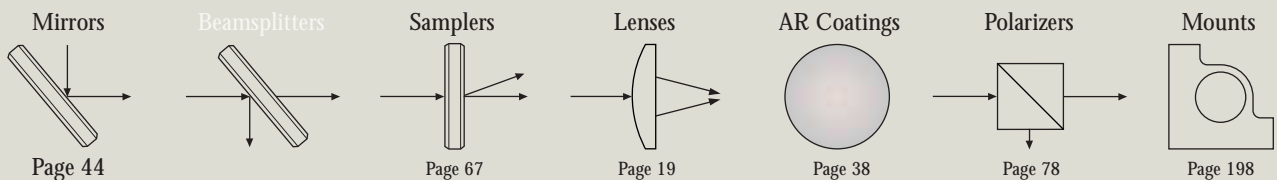
## Specifications

**Material:** BK7 glass  
**Dimensions Tolerance:** +0 -0.2 mm  
**Flatness:**  $\lambda/8$  at 633 nm  
**Beam Deviation:** <3 arc min  
**Surface Quality:** 20-10  
**Clear Aperture:** 80% side  
**Reflectance:** 50%  $\pm 5\%$   
**Transmission:** 50%  $\pm 5\%$   
**Polarization:** |s-p| < 5%  
**Laser Damage Threshold**  
**CW:** 2 kW/cm<sup>2</sup>  
**Pulsed (10 ns):** 1 J/cm<sup>2</sup>  
**Coating:** R  $\leq 0.25\%$  per surface

## Non-polarizing Diode Laser Cube Beamsplitters

Wavelength (nm)	Side, a (mm)	Catalog Number	Price US
633	12.7	44-2947	\$210.00
633	25.4	44-2988	\$285.00
670	12.7	44-3028	\$210.00
670	25.4	44-3069	\$285.00
780	12.7	44-3101	\$210.00
780	25.4	44-3143	\$285.00
830	12.7	44-3184	\$210.00
830	25.4	44-3226	\$285.00
980	12.7	44-3267	\$210.00
980	25.4	44-3309	\$285.00
1300	12.7	44-3341	\$210.00
1300	25.4	44-3382	\$285.00
1550	12.7	44-3424	\$210.00
1550	25.4	44-3465	\$285.00

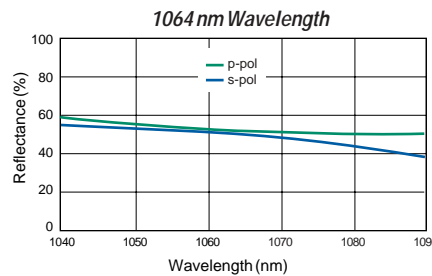
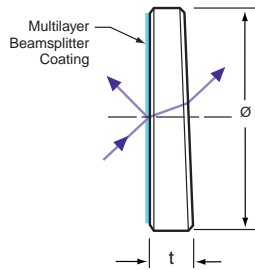
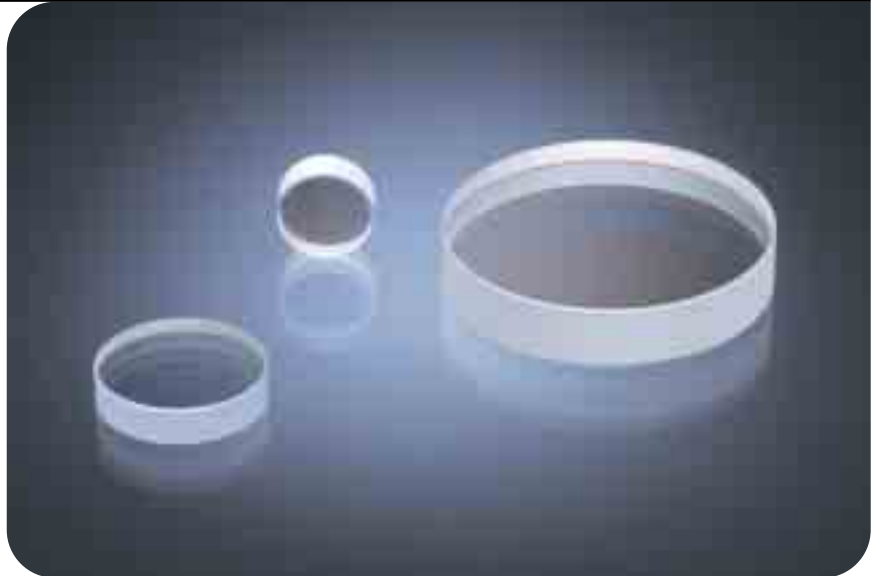
## Diode Laser Optics





# Non-polarizing Nd:YAG/YLF Plate Beamsplitters

- 50:50 split
- Non-polarizing
- Laser quality substrates



These plate beamsplitters are made for use with Nd:YAG or Nd:YLF lasers. Laser grade BK7 is coated on one side with a beamsplitter coating and on the other with an antireflection coating.

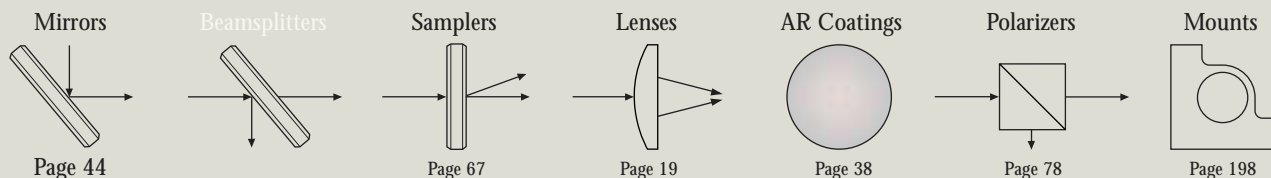
## Specifications

**Material:** BK7 glass  
**Diameter Tolerance:** +0 -0.2 mm  
**Thickness Tolerance:** ±0.2 mm  
**Flatness:**  $\lambda/10$  at 633 nm  
**Parallelism:** 30 ±5 arcmin  
**Surface Quality:** 10-5  
**Clear Aperture:** 90% diameter  
**Reflectance:** 50 ±5%  
**Transmission:** 50% ±5%  
**Polarization:** |s-p| <5%  
**Angle of Incidence:** 45 deg.  
**Laser Damage Threshold**  
**Pulsed (10 ns):** 1 J/cm<sup>2</sup> @1064 nm  
**AR Coating:** R ≤0.5% on second surface

## Non-polarizing Nd:YAG/YLF Laser Plate Beamsplitters

Catalog Number	Wavelength (nm)	Laser Type	Diameter, Ø (mm)	Thickness, t (mm)	Price US
44-1584	532	Nd:YAG	25.4	6.0	\$230.00
44-1592	532	Nd:YAG	50.8	10.0	\$330.00
44-1824	1053	Nd:YLF	25.4	6.0	\$230.00
44-1832	1053	Nd:YLF	50.8	10.0	\$330.00
44-1865	1064	Nd:YAG	25.4	6.0	\$230.00
44-1873	1064	Nd:YAG	50.8	10.0	\$330.00

## Nd:YAG/YLF Laser Optics



Optics

Lenses & Microscope Components

Coatings

Mirrors, Beamsplitters & Windows

Prisms & Polarizers

Filters

Pinholes

Opto-mechanics

Tables, Breadboards & Rails

Mounting Hardware

Mirror & Component Mounts

Manual Micro-positioners

Motorized Positioners

Lasers & Accessories

Beam Delivery

Laser Measurement

Diode Laser Modules

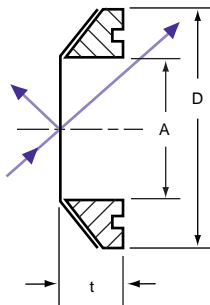
# Pellicle Beamsplitters



- *Extra thin construction*
- *Elimination of second surface reflections*
- *Elimination of refraction displacement errors*

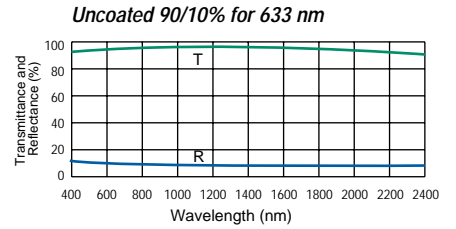
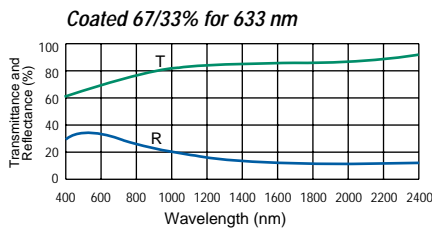
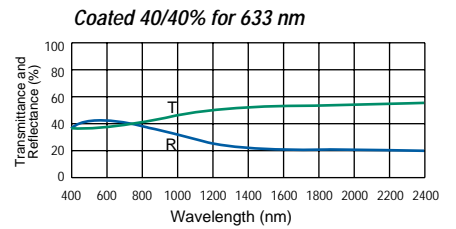
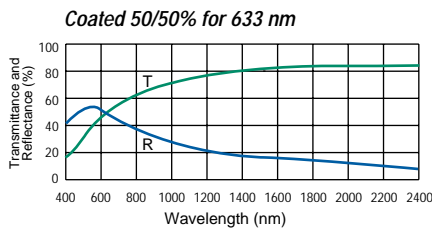
These Pellicle Beamsplitters are ideally suited to laser sampling. Their versatile mounting and light weight construction make them an effective high-quality window, or high-resolution mirror.

The pellicle itself is a delicate, elastic membrane of nitrocellulose mounted on an optically flat aluminum alloy frame. The pellicle is stretched taut over the lapped edges of the frames, ensuring surface flatness. The pellicle thickness is 2  $\mu\text{m}$  and exhibits a thickness uniformity of 2 wavelengths per 25 mm.



The major advantage of pellicle beamsplitters is elimination of second surface reflections. This is because the membrane is so thin that reflections from the front and back surfaces are essentially superimposed.

Representative curves for each type are provided. Three different sizes are available for each type.



## Specifications

**Material:** Nitrocellulose  
**Diameter Tolerance:** +0 -0.5mm  
**Thickness:** 2  $\mu\text{m}$   
**Uniformity:** 2 $\lambda$ /25 mm  
**Surface Quality:** 40-20  
**Useful Temperature Range:** -40-150 °C  
**Damage Threshold:** 2 W/cm<sup>2</sup>

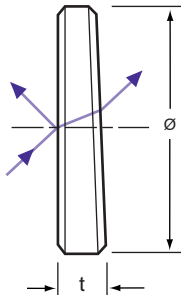
## Pellicle Beamsplitters

Catalog Number	Split Ratio T/R at 633 nm	Aperture, A (mm)	Frame Diameter, D (mm)	Frame Thickness, t (mm)	Price US
44-3960	50:50	25.4	34.9	4.8	\$152.00
44-3978	50:50	50.8	63.5	6.4	\$173.00
44-3994	67:33	25.4	34.9	4.8	\$152.00
44-4000	67:33	50.8	63.5	6.4	\$173.00
44-4026	40:40	25.4	34.9	4.8	\$152.00
44-4034	40:40	50.8	63.5	6.4	\$173.00
44-4059	90:10	25.4	34.9	4.8	\$86.00
44-4067	90:10	50.8	63.5	6.4	\$121.00



# Broadband Beam Samplers

- Ideal for real-time monitoring of power or wavelength
- Useable with tunable lasers, laser diodes, or broadband light sources
- Approximately 4% of input is sampled



These beam-samplers are designed to work at 45 degrees incidence. They provide a 4% reflected beam while allowing the main beam to be transmitted. One surface is uncoated and the natural reflectivity of the surface

provides the sample beam. The substrate is wedged and the back surface has a high efficiency broadband antireflection coating to eliminate back surface reflections. Three separate antireflection coatings are offered.

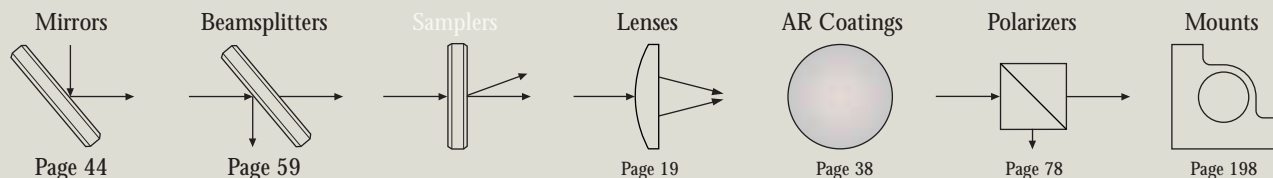
## Specifications

**Material:** BK7 glass  
**Diameter Tolerance:** +0 -0.2mm  
**Flatness:**  $\lambda/10$   
**Parallelism:**  $30 \pm 5$  arcmin  
**Surface Quality:** 10-5  
**Clear Aperture:** 90% diameter  
**Reflectance:**  $R=4\% \pm 1\%$   
**Polarization:**  $|s-p| < 10\%$   
**Angle of Incidence:** 45 deg.  
**Laser Damage Threshold Pulsed (10 ns):** 1 J/cm<sup>2</sup>

## Broadband Beam Samplers

Catalog Number	Waveband (nm)	Diameter, Ø (mm)	Thickness, t (mm)	Price US
44-2343	420-700	25.4	6.0	\$95.00
44-2350	420-700	50.8	10.0	\$170.00
44-2384	600-900	25.4	6.0	\$95.00
44-2392	600-900	50.8	10.0	\$170.00
44-2426	800-1200	25.4	6.0	\$95.00
44-2434	800-1200	50.8	10.0	\$170.00

## Gas Laser Optics



### Optics

Lenses & Microscope Components

Coatings

Mirrors, Beamsplitters & Windows

Prisms & Polarizers

Filters

Pinholes

### Opto-mechanics

Tables, Breadboards & Rails

Mounting Hardware

Mirror & Component Mounts

Manual Micro-positioners

Motorized Positioners

### Lasers & Accessories

Beam Delivery

Laser Measurement

Diode Laser Modules