

LASER OUTPUT COUPLERS

Low reflectance **Group Delay Dispersion**

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

The standard substrates are parallel within 30 arcsec. If you need wedged substrates, please, choose from chapter Wedge Prisms (page 1.37).

SUBSTRATE

Material	UV grade Fused Silica
S1 Surface Flatness	
S1 Surface Quality	20–10 scratch & dig (MIL-PRF-13830B)
S2 Surface Flatness	
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
Angle of Incidence	0–8°
Parallelism	30 arcsec
Back side antireflection coat	R < 0.25%
Laser Damage Threshold	>100 mJ/cm ² , 50 fsec pulse, 800 nm typical

Wavelength, nm	Reflection %	Transmission %	Substrate material	Catalogue number		
				Ø12.7 × 3 mm	Ø25.4 × 6 mm	Ø50.8 × 8 mm
1030	50±3	50±3	UV FS	041-0150	042-0150	045-0150
1030	60±3	40±3	UV FS	041-0160	042-0160	045-0160
1030	65±3	35±3	UV FS	041-0165	042-0165	045-0165
1030	70±3	30±3	UV FS	041-0170	042-0170	045-0170
1030	75±3	25±3	UV FS	041-0175	042-0175	045-0175
1030	80±3	20±3	UV FS	041-0180	042-0180	045-0180
1030	85±3	15±3	UV FS	041-0185	042-0185	045-0185
1030	90±2	10±2	UV FS	041-0190	042-0190	045-0190
1030	95±2	5±2	UV FS	041-0195	042-0195	045-0195
1030	97±1	3±1	UV FS	041-0197	042-0197	045-0197
1030	98±1	2±1	UV FS	041-0198	042-0198	045-0198
1030	99.0±0.5	1.0±0.5	UV FS	041-0199	042-0199	045-0199
800	50±3	50±3	UV FS	041-1150	042-1150	045-1150
800	60±3	40±3	UV FS	041-1160	042-1160	045-1160
800	65±3	35±3	UV FS	041-1165	042-1165	045-1165
800	70±3	30±3	UV FS	041-1170	042-1170	045-1170
800	75±3	25±3	UV FS	041-1175	042-1175	045-1175
800	80±3	20±3	UV FS	041-1180	042-1180	045-1180
800	85±3	15±3	UV FS	041-1185	042-1185	045-1185
800	90±2	10±2	UV FS	041-1190	042-1190	045-1190
800	95±2	5±2	UV FS	041-1195	042-1195	045-1195
800	97±1	3±1	UV FS	041-1197	042-1197	045-1197
800	98±1	2±1	UV FS	041-1198	042-1198	045-1198
800	99.0±0.5	1.0±0.5	UV FS	041-1199	042-1199	045-1199

RELATED PRODUCTS

Uncoated Elliptical Mirrors

See page 1.8

Kinematic Mirror and Beamsplitter Mount 840-0020

See page 8.54

