
SUBSTRATES AND WINDOWS



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DDC TECHNOLOGIES



These precision flats can be used in laboratory interferometers or as quality assurance standards. To ensure long-term thermal and mechanical accuracy flats are polished from selected fused silica. In order to double the utility of the optics, both faces are polished to the same 1/20 wave figure. Internal fringe patterns are virtually eliminated by 30 arc-minute nonparallelism of the faces.

SPECIFICATIONS

Material	UV grade fused silica
Surface polish	20-10 scratch-dig
Clear aperture (C.A.)	80% of the diameter
Diameter tolerance	+0.00, -0.12mm
Thickness tolerance	± 0.3mm

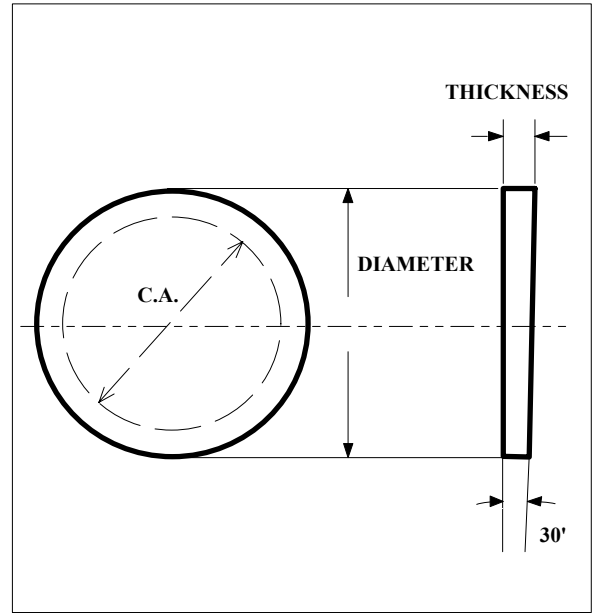
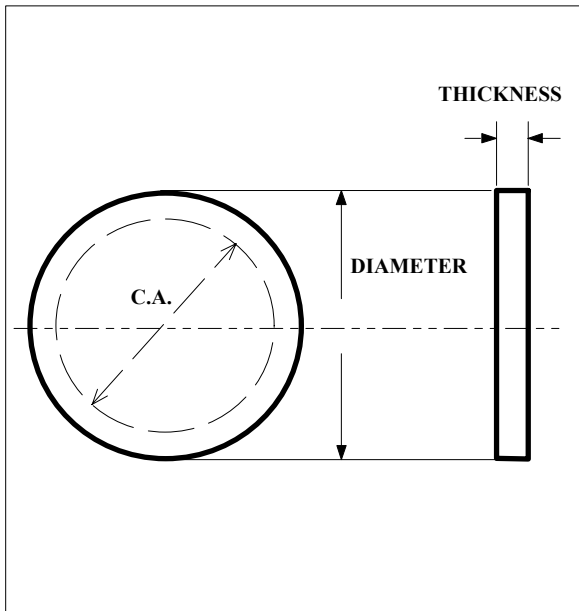


Fig. 66 Interferometer Flat.

Model	Diameter (mm)	Thickness (mm)	Flatness	Price
20205	12.7	3.2	$\lambda/20$	
20210	25.4	3.2	$\lambda/20$	
20215	25.4	6.3	$\lambda/20$	
20220	38.1	10.0	$\lambda/20$	
20225	50.8	12.7	$\lambda/20$	
20230	76.2	15.0	$\lambda/20$	
20235	101.6	20.0	$\lambda/15$	
20240	152.4	28.0	$\lambda/15$	

Contact DDC TECHNOLOGIES for other size or accuracy demands.



These precision flats can be used in applications where wavefront distortion is critical, e.g. solid etalons, beam splitters (in interferometry), optical windows.

SPECIFICATIONS

Material	UV grade fused silica (FS) BK7/A
Surface polish	40-20 scratch-dig
Optical aperture	80% of the diameter
Diameter tolerance	+0.00, -0.12mm
Thickness tolerance	± 0.3mm

Fig. 67 Research Quality Substrate.

Model	Diameter (mm)	Thickness (mm)	Flatness	Parall. (sec)	Material	Price
20010	12.7	3.2	$\lambda/20$	1	FS	\$72.00
20015	12.7	3.2	$\lambda/20$	2	BK7/A	\$58.00
20020	25.4	3.2	$\lambda/20$	1	FS	\$150.00
20025	25.4	6.3	$\lambda/20$	1	FS	\$165.00
20030	25.4	6.3	$\lambda/20$	2	BK7/A	\$90.00
20035	38.1	10.0	$\lambda/20$	1	FS	\$210.00
20040	38.1	10.0	$\lambda/20$	2	BK7/A	\$135.00
20045	50.8	12.7	$\lambda/20$	1	FS	\$329.00
20050	50.8	12.7	$\lambda/20$	2	BK7/A	\$195.00
20055	76.2	15.0	$\lambda/20$	1	FS	\$555.00
20060	76.2	15.0	$\lambda/20$	2	BK7/A	\$285.00
20065	101.6	20.0	$\lambda/20$	1	FS	\$845.00
20070	101.6	20.0	$\lambda/20$	2	BK7/A	\$288.00

Contact DDC TECHNOLOGIES for other size or accuracy demands.



These substrates of highly selected fused silica, a variety of radii of curvature are available. These substrates are quoted uncoated, but you may choose the appropriate coating on the next pages of the catalogue.

SPECIFICATIONS

Material	UV grade fused silica
Surface polish	10-20 scratch-dig
Front surface	$\lambda/20$ wave
Rear surface	$\lambda/10$ wave
Diameter tolerance	+0.00, -0.12mm
Thickness tolerance	± 0.3 mm

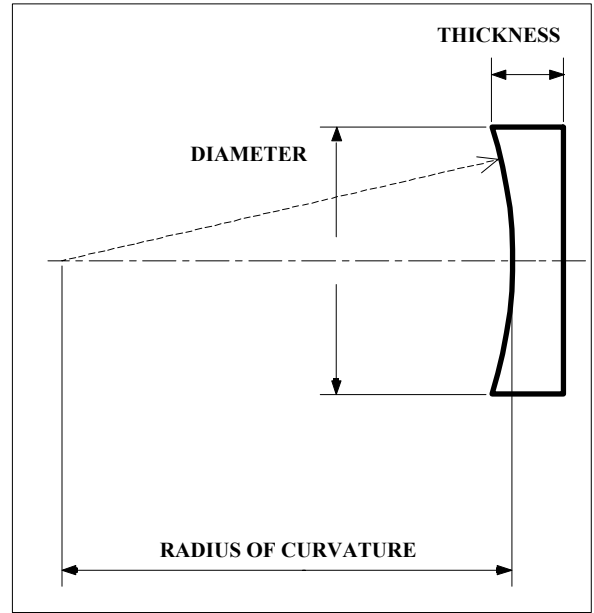


Fig. 69 Parameters of Laser Cavity Substrates.

Model	Diameter (mm)	Thickness (mm)	Radius of curvature (meters)	Price
20405	25.4	6.3	0.25	
20410	25.4	6.3	0.5	
20415	25.4	6.3	1.0	
20420	25.4	6.3	2.0	
20425	25.4	6.3	4.0	
20430	25.4	6.3	10.0	
20435	25.4	6.3	20.0	

Contact DDC TECHNOLOGIES for other size or precision demands.



Our optical wedges are fused silica or borosilicate crown glass windows having a 3 degree wedge of one face. These wedge angle window are used for beam steering. A collimated laser beam at normal incidence to a wedged window of refractive index n is deviated according to (Fig. 71):

$$\alpha \cong (n - 1)\xi,$$

where ξ - window wedge angle, α -deviated angle.

SPECIFICATIONS

Material	UV grade fused silica (FS) or BK7/A
Wedge angle	3 degrees \pm 30'
Flatness (both faces)	$\lambda/10$ wave at 632.8 nm
Surface polish	20-10 scratch-dig
Clear aperture	80% of the diameter
Diameter tolerance	+0.00, -0.12mm
Center thickness tolerance	\pm 0.5 mm

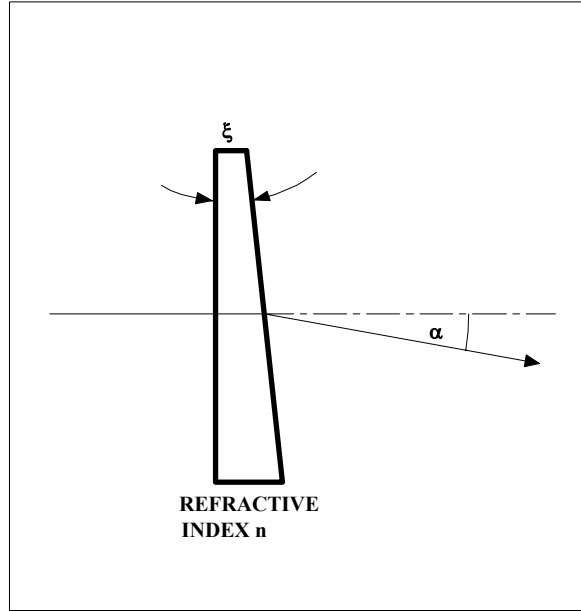


Fig. 71 Beam steering with the help of the Optical Wedge.

Dia. (mm)	Center Thick. (mm)	FS		BK7/A	
		Model	Price	Model	Price
25.4	6.3	20305		20355	
38.2	10.0	20310		20360	
50.8	12.7	20315		20365	

Contact DDC TECHNOLOGIES for other size or precision demands or for antireflection coatings.

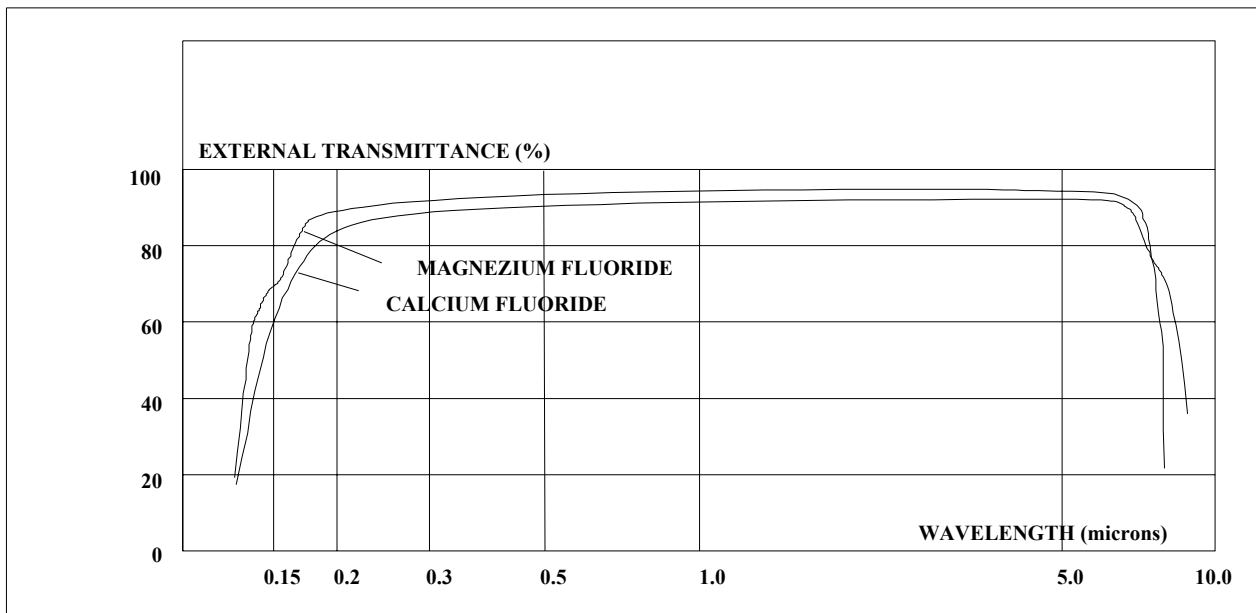


Fig. 72 External Transmittance for Magnesium Fluoride and Calcium Fluoride (3mm thick window).

CALCIUM FLUORIDE SUBSTRATES

These substrates transmit from 150 nm to 8 um. At the wavelength 500 nm transmittance reaches 94% (see Fig. 73). Calcium fluoride at 18°C have solubility about 16 mg/l H₂O and slightly sensitive to thermal and mechanical shock.

SPECIFICATIONS

Material Optical or UV quality calcium fluoride
 Flatness λ/15 at 632.8 nm
 Parallelism 20 seconds or better
 Surface polish 60-40 scratch-dig
 Aperture 80% of the diameter
 Diameter +0.0, -0.12 mm

Model	Diameter (mm)	Thickness (mm)	Price
32005	25.4	5.0	
32010	38.1	6.0	
32015	50.8	7.6	

MAGNEZIUM FLUORIDE SUBSTRATES

These magnesium fluoride substrates transmit from 140 nm to 7.5 microns. At the wavelength 500 nm transmittance reaches 95% (see Fig. 74). Magnesium fluoride has solubility 1 mg/l, susceptible to thermal and mechanical shock, but withstand radiation darkening.

SPECIFICATIONS

Material Optical or UV quality magnesium fluoride
 Flatness λ/15 at 632.8 nm
 Parallelism 20 seconds or better
 Surface polish 60-40 scratch-dig
 Aperture 80% of the diameter
 Diameter +0.0, -0.12 mm

Model	Diameter (mm)	Thickness (mm)	Price
33005	25.4	5.0	
33010	38.1	6.0	
33015	50.8	7.6	