

Sapphire Lenses

Because of its excellent transmission characteristics, sapphire can be used for lenses and windows in the spectral range from UV to IR at wavelengths of up to 5 μm . The extraordinary hardness of the material makes sapphire perfect for applications in which break-proof and scratch resistant material is required. In laser technology, these lenses are often used in Er:YAG lasers that emit at 2.94 μm .

LASER COMPONENTS offers sapphire lenses of all common types in high power laser quality. New developments in processing can ensure excellent lens features that were unachievable with sapphire until now. The quality of polishing and surface figure almost matches that of fused silica lenses. The values for absorption and scattering are minimal; thus, the damage threshold of the lenses has improved considerably.

Nomenclature

PLCX/ PLCC	-25.4	/51.5	SA
Product Code (Sapphire Plano Convex/ Sapphire Plano Concave Lens)	Diameter in mm	Convex/concave radius of curvature in mm	Material Code SA: sapphire

Typical Specifications

Material	Sapphire (random oriented) (other orientations upon request)
Diameter tolerance	+ 0.00 mm; - 0.20 mm
Thickness tolerance	\pm 0.20 mm
Radii tolerance	\pm 1 %
Centering tolerance	4/3' according to ISO 10110
Surface figure Curved surface Plane surface	3/-(0.5/-) according to ISO 10110 3/0.5(0.5/-) according to ISO 10110 $\lambda/4$ according to MIL-O-1380A
Surface quality	5/4 x 0.063 for 1.0" substrates according to ISO 10110 20-10 according to MIL-O-1380A
Protective chamfer	0.2 - 0.4 mm x 45°
Clear aperture	85 % of diameter

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Part No.	Nominal f [mm]	Diameter Ø [mm]	f [mm] (193 nm) n = 1.92311	f [mm] (1320 nm) n = 1.74618	f [mm] (2010 nm) n = 1.7336	f [mm] (2940 nm) n = 1.711	Curvature rcx, rcc [mm]	Center Thickness CT [mm]	Edge Thickness ET [mm]
PLCX-10./11.6SA	15	10.0	12.6	15.5	15.8	16.3	11.6	3.0	1.9
PLCX-25.4/17.8SA	25	25.4	19.2	23.8	24.2	25.1	17.8	7.3	2.0
PLCX-12.7/35.5SA	50	12.7	38.4	47.5	48.4	50.0	35.5	2.6	2.0
PLCX-25.4/71.0SA	100	25.4	76.9	95.2	96.8	100.0	71.0	3.2	2.0
PLCX-20.0/127.8SA	180	20.0	137.6	170.2	173.1	178.9	127.0	2.4	2.0
PLCC-12.7/38.5SA	-55	12.7	-41.7	-51.6	-52.5	-54.2	38.5	1.5	2.0
PLCC-12.7/50.0SA	-70	12.7	-54.2	-67.0	-68.2	-70.4	50.0	1.6	2.0
PLCC-8.0/500SA	-700	8.0	-541.6	-670.1	-681.6	-704.2	500.0	2.0	2.0

Other sizes are available upon request.

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