

LENS CATALOG



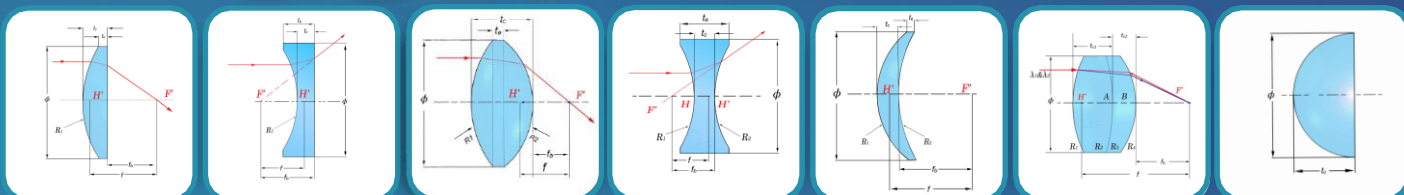
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10 DAYS LENS SAMPLING



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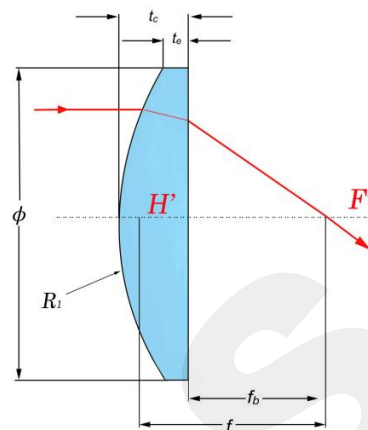


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Plano Convex Lens

Specifications:

- **Material:** BK7 or other optical glass, Fused Silica, CaF2, ZnSe
- **Diameter Tolerance:** +0.0, -0.15mm
- **Thickness Tolerance:** +/-0.2mm
- **Paraxial Focal Length:** ±2%
- **Centration:** 3 arc minutes
- **Surface Quality:** 60-40 scratch and dig
- **Surface Figure:** $\lambda/4@632.8\text{nm}$
- **Clear Aperture:** >85%
- **Coating:** Customer specified



Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN0035-3R9-35ZF6	3.5	3.94		3	3.5		H-ZF6
LEN0040-005-19	4	5	3.78	2.58	1.9	0.95	
LEN0040-6R3-17	4	6.3	5.1	3.25	1.7	1.01	
LEN0040-010-17	4	10	8.8	5.17	1.7	1.3	
LEN0050-4R97-18-ZLaF50	5	4.97		4.02	1.87	1	H-ZLaF50B
LEN0050-008-15	5	8	7	4.13	1.5	0.66	
LEN0060-7R3-30	6	7.2		3.75	3		
LEN0060-008-20	6	7.9		4.125	2		
LEN0060-010-25	6	10	8.3	5.15	2.5	1.5	
LEN0060-012-23	6	12	10.4	6.18	2.3	1.5	
LEN0060-14R9-20	6	14.9		7.75	2	1.4	
LEN0060-015-21	6	15	13.6	7.73	2.1	1.5	
LEN0060-15R6-10ZF6	6	15.5		11.668	1		H-ZF6
LEN0060-16R2-19LaF10L	6	16.1		12.8	1.9		H-LaF10L
LEN0060-18R2-19ZF2	6	18.2		12.33	1.9		H-ZF2
LEN0060-030-18	6	30	28.8	15.45	1.8	1.5	
LEN0063-008-26	6.3	8	6.2	4.13	2.6	1.14	
LEN0063-010-26	6.3	10	8.3	5.17	2.6	1.53	
LEN0063-12R5-23	6.3	12.5	10.9	6.46	2.3	1.48	
LEN0063-016-21	6.3	16	14.6	8.26	2.1	1.48	
LEN0063-020-20	6.3	20	18.7	10.36	2	1.51	
LEN0063-025-19	6.3	25	23.7	12.91	1.9	1.51	
LEN0063-040-17	6.3	40	38.8	20.65	1.7	1.46	
LEN0063-063-17	6.3	63	61.8	32.5	1.7	1.55	
LEN0068-08R9-30ZF13	6.8	8.9		7.06	3		H-ZF13
LEN0070-07R3-34	7	7.2		3.75	3.4		
LEN0080-24R7-17	8	24.7		12.8	1.7		
LEN0080-090-20	8	90		48.68	2		
LEN0084-17R7-22	8.4	17.7		9.15	2.2		
LEN0090-012-34	9	12	9.7	6.18	3.4	1.5	
LEN0090-19R6-25ZK50	9	19.6		12	2.5		H-ZK50
LEN0090-020-25	9	20	18.3	10.3	2.5	1.5	
LEN0099-18R9-31	9.87	18.8		9.793	3.1		
LEN0100-12R5-39	10	12.5	9.9	6.46	3.9	1.53	



Plano Convex Lens

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN0100-15R1-30BaK2	10	15.1	13.2	8.183	3	1.3	H-BaK2
LEN0100-016-32	10	16	13.8	8.26	3.2	1.52	
LEN0100-020-28	10	20	18.2	10.36	2.8	1.51	
LEN0100-025-25	10	25	23.3	12.91	2.5	1.49	
LEN0100-31R5-23	10	31.5	29.9	16.27	2.3	1.51	
LEN0100-040-21	10	40	38.6	20.65	2.1	1.49	
LEN0100-050-20	10	50	48.7	25.84	2	1.51	
LEN0100-60R1-30	10	60		31.041	3		
LEN0100-063-19	10	63	61.6	32.5	1.9	1.51	
LEN0100-100-17	10	100	98.8	51.64	1.7	1.46	
LEN0110-12R6-38	11	12.6		6.55	3.8		
LEN0110-15R5-32	11	15.5		8.017	3.2		
LEN0120-20R3-30	12	20.3	18.3	10.5	3	1.12	
LEN0120-23R9-28	12	23.9		12.42	2.8		
LEN0120-23R9-28	12	23.9		12.42	2.8		
LEN0124-017-50	12.4	17		8.743	5		
LEN0125-150-28	12.5	50			2.8		
LEN0127-015-51	12.7	15	11.6	7.73	5.1	1.8	
LEN0127-020-40	12.7	20	17.3	10.3	4	1.8	
LEN0127-020-42	12.7	20		10.37	4.2		
LEN0127-025-35	12.7	25	22.6	12.88	3.5	1.8	
LEN0127-030-32	12.7	30	27.8	15.45	3.2	1.8	
LEN0127-030-30	12.7	30	28	15.495	3	1.64	
LEN0127-030-34	12.7	30		15.55	3.4		
LEN0127-040-28	12.7	40	38.1	20.6	2.8	1.8	
LEN0127-040-29	12.7	40		20.67	2.9		
LEN0127-050-26	12.7	50	48.2	25.75	2.6	1.8	
LEN0127-100-22	12.7	100	98.5	51.51	2.2	1.8	
LEN0127-100-127	12.7	100		51.68	12.7		
LEN0140-30R3-50	14	30.3		15.668	5		
LEN0140-30R3-34	14	30.3		15.668	3.4		
LEN0140-057-50	14	57		29.316	5		
LEN0150-060-23	15	26.4	23.4	13.644	4.5	2.25	
LEN0150-060-23	15	60	58.5	31.02	2.3	1.38	
LEN0160-020-48	16	20	16.9	10.36	4.8	1.02	
LEN0160-025-40	16	25	22.3	12.91	4	1.22	
LEN0160-31R5-36	16	31.5	29.1	16.27	3.6	1.5	
LEN0160-040-31	16	40	37.9	20.65	3.1	1.49	



Plano Convex Lens

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN0160-050-28	16	50	48.2	25.84	2.8	1.53	
LEN0160-063-25	16	63	61.2	32.5	2.5	1.5	
LEN0160-080-23	16	80	78.4	41.3	2.3	1.52	
LEN0160-100-21	16	100	98.6	51.64	2.1	1.48	
LEN0160-160-19	16	160	158.7	82.62	1.9	1.51	
LEN0170-030-34	17	30		15.28	3.4		
LEN0170-48R7-30	17	48.7	46.7	25.19	3	1.52	
LEN0180-020-71	18	20	15.3	10.3	7.1	1.8	
LEN0180-025-55	18	25	21.3	12.88	5.5	1.8	
LEN0180-030-47	18	30	26.9	15.45	4.7	1.8	
LEN0180-050-34	18	50	47.7	25.75	3.4	1.8	
LEN0190-36R6-46	18.98	36.5		18.978	4.567		
LEN0200-030-45	20	30	27	15.5	4.5	0.84	
LEN0200-050-42	20	50	47.2	25.84	4.2	2.19	
LEN0200-050-113	20	50		25.92	11.3		
LEN0250-25R4-112	25	25.4	18	13.11	11.16	2	
LEN0250-26R7-95	25	26.7	20.4	13.8	9.5	1.55	
LEN0250-31R5-79	25	31.5	26.3	16.27	7.86	2	
LEN0250-040-62	25	40	35.8	20.65	6.21	2	
LEN0250-050-56	25	49.9		25.985	5.51		
LEN0250-050-47	25	50	46.1	25.84	4.7	1.47	
LEN0250-063-40	25	63	59.4	32.5	4	1.5	
LEN0250-076-36	25	76	73.6	39.28	3.6	1.56	
LEN0250-080-39	25	80	77.3	41.3	3.94	2	
LEN0250-100-35	25	100	97.6	51.64	3.54	2	
LEN0250-125-32	25	125	122.8	64.55	3.22	2	
LEN0250-160-30	25	160	158	82.62	2.95	2	
LEN0250-200-28	25	200	198.1	103.28	2.76	2	
LEN0250-250-26	25	250	248.5	129.24	2.61	2	
LEN0250-315-20	25	315	313.6	162.79	2	1.5	
LEN0250-400-24	25	400	397.5	206.1	2.38	2	
LEN0250-500-23	25	500	498.4	258.18	2.3	2	
LEN0250-630-18	25	630	628.8	325.58	1.78	1.54	
LEN0250-800-17	25	800	798.8	413.44	1.7	1.5	
LEN0250-1000-22	25	1000	998.8	516.5	2.15	2	
LEN0254-99R3-40	25.4	99.2		51.5	4		
LEN0286-46R8-68B270	28.6	46.7		24.559	6.74		B270



Plano Convex Lens

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN0300-035-99	30	35	28.5	18.088	9.9	1.92	
LEN0400-050-120	40	50	42.1	25.84	11.98	2.5	
LEN0400-060-77	40	60	54.9	41.3	7.67	2.5	
LEN0400-60-93	40	60	53.9	31.03	9.31	2	
LEN0400-063-94	40	63	56.7	32.5	9.36	2.5	
LEN0400-80-90	40	80	74.7	41.48	9	2.86	
LEN0400-100-65	40	100	95.7	51.64	6.53	2.5	
LEN0400-100-70	40	100	95.3	51.85	7	3.02	
LEN0400-125-57	40	125	121.2	64.55	5.68	2.5	
LEN0400-160-50	40	160	156.7	82.62	4.96	2.5	
LEN0400-200-45	40	200	197	103.28	4.45	2.5	
LEN0400-200-50	40	200	196.7	103.7	5	3.05	
LEN0400-250-41	40	250	247.6	129.24	4.06	2.5	
LEN0400-300-50	40	300	296.7	155.04	5	3.7	
LEN0400-400-50	40	400	396.7	206.72	5	4.03	
LEN0400-500-33	40	500	497.8	258.18	3.28	2.5	
LEN0450-100-61	45	100	96.4	51.9	6.1	0.97	
LEN0450-120-61	45	120	116	62.2	6.1	1.89	
LEN0500-060-114	50	60	72.4	41.3	11.43	3	
LEN0500-063-147	50	63	53.2	32.5	14.73	3	
LEN0500-75-110	50	75	68.3	38.76	11	1.86	
LEN0500-100-95	50	100	93.7	51.64	9.45	3	
LEN0500-100-100	50	100	93.4	51.68	10	3.55	
LEN0500-125-100	50	125	118.3	64.6	10	4.97	
LEN0500-150-90	50	150	144	77.52	9	4.48	
LEN0500-160-69	50	160	155.4	82.62	6.87	3	
LEN0500-175-90	50	175	169	90.44	9	5.48	
LEN0500-200-51	50	200	196.6	103.36	5.07	2	
LEN0500-250-54	50	250	246.7	129.24	5.44	3	
LEN0500-250-49	50	250	246.7	129.21	4.94	2.5	
LEN0500-500-42	50	500	497.2	258.18	4.21	3	
LEN0500-500-50	50	500	496.7	258.4	5	3.79	
LEN0630-100-137	63	100	90.9	51.64	13.72	3	
LEN0630-125-112	63	125	117.6	64.55	11.21	3	
LEN0630-160-92	63	160	153.9	82.62	9.24	3	
LEN0630-250-69	63	250	245.7	129.24	6.9	3	



Plano Convex Lens

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN0630-500-49	63	500	496.3	258.18	4.93	3	
LEN0630-1000-40	63	1000	997.6	516.5	3.96	3	
LEN0750-75-326.8	75	75	53.4	38.76	32.68	3.66	
LEN0750-150-115	75	150	142.4	77.52	11.45	1.78	
LEN0750-200-87	75	200	194.2	103.36	8.74	1.7	
LEN0800-150-141	80	150	140.6	77.52	14.12	3	
LEN0800-300-83	80	300	294.5	155.04	8.25	3	
LEN0800-500-61	80	500	495.5	258.18	6.12	3	
LEN0800-1000-46	80	1000	996	516.82	4.6	3.05	
LEN0800-2000-38	80	2000	1997.5	1033.65	3.76	2.99	
LEN01000-160-209	100	160	146.2	82.62	20.85	4	
LEN01000-200-153	100	200	189.9	103.36	15.3	2.4	
LEN01000-250-141	100	250	241.3	129.24	14.05	4	
LEN01000-300-114	100	300	292.4	155.04	11.4	3.12	
LEN01000-400-107	100	400	392.9	206.72	10.7	4.56	
LEN01000-500-89	100	500	494.1	258.18	8.89	4	
LEN01000-500-89	100	500	494.1	258.4	8.9	4.02	
LEN01000-600-88	100	600	594.2	310.08	8.78	4.72	
LEN01250-200-246	125	200	183.8	103.36	24.55	3.51	
LEN01250-250-196	125	250	237	129.2	19.6	3.48	
LEN01250-300-174	125	300	288.5	155.04	17.4	4.24	
LEN01250-400-136	125	400	391	206.72	13.6	3.93	
LEN01250-500-129	125	500	491.5	258.4	12.9	5.23	
LEN01250-600-118	125	600	592.2	310.08	11.8	5.44	
LEN01250-700-108	125	700	692.9	361.76	10.75	5.31	
LEN01250-800-103	125	800	793.2	413.44	10.3	5.55	
LEN01500-300-233	150	300	284.6	155.04	23.3	3.95	
LEN01500-400-166	150	400	389	206.72	16.59	2.5	
LEN01500-500-154	150	500	489.8	258.4	15.4	4.28	
LEN01500-600-137	150	600	590	310.08	13.7	4.49	
LEN01500-700-126	150	700	691.7	361.76	12.57	4.71	
LEN01500-800-121	150	800	792	413.44	12.1	5.24	
LEN02000-400-292	200	400	380.7	206.72	29.2	3.4	
LEN02000-500-243	200	500	483.9	258.4	24.3	4.17	
LEN02000-600-215	200	600	585.8	310.08	21.5	4.93	
LEN02000-700-196	200	700	687	361.76	19.6	5.5	



Plano Convex Lens

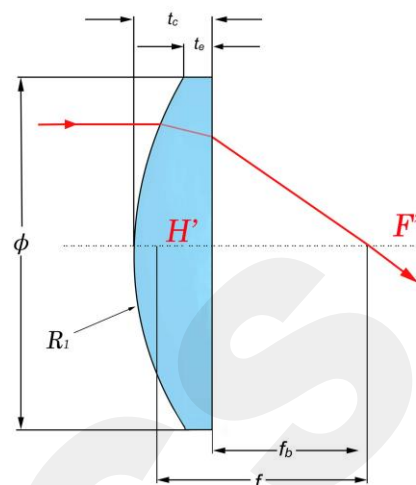
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN02000-800-181	200	800	788	413.44	18.1	5.92	
LEN02000-900-173	200	900	888.6	465.12	17.3	6.4	
LEN02000-1000-167	200	1000	989	516.8	16.7	6.93	
LEN02500-600-305	250	600	579.9	310.08	30.5	4.19	
LEN02500-700-266	250	700	682.5	361.76	26.6	4.32	
LEN02500-800-245	250	800	783.8	413.44	24.5	5.15	
LEN02500-900-237	250	900	884.3	465.12	23.7	6.59	
LEN02500-1000-225	250	1000	985.2	516.8	22.5	7.16	
LEN02500-1100-216	250	1100	1085.8	568.48	21.6	7.69	
LEN02500-1200-201	250	1200	1186.7	620.16	20.1	7.27	
LEN03000-800-346	300	800	777.2	413.44	34.6	6.43	
LEN03000-1000-296	300	1000	980.4	516.8	29.6	7.35	
LEN03000-1200-268	300	1200	1182.3	620.16	26.8	8.39	
LEN03000-1400-240	300	1400	1384.1	723.52	24	8.28	
LEN03000-1600-243	300	1600	1584	826.88	24.3	10.58	



SiO₂ Plano Convex Lens

Specifications:

- **Material:** Fused Silica
- **Diameter Tolerance:** +0.0, -0.15mm
- **Thickness Tolerance:** +/-0.2mm
- **Paraxial Focal Length:** ±2%
- **Centration:** 3 arc minutes
- **Surface Quality:** 60-40 scratch and dig
- **Surface Figure:** λ/4@632.8nm
- **Clear Aperture:** >85%
- **Coating:** Customer specified



Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN0040-005-22FS	4	5	3.48	2.29	2.2	1
LEN0040-6R3-21FS	4	6.3	4.85	2.89	2.11	1.3
LEN0040-010-20FS	4	10	8.6	4.58	1.96	1.5
LEN0040-015-18FS	4	15	13.7	6.88	1.8	1.5
LEN0040-020-17FS	4	20	18.8	9.17	1.72	1.5
LEN0050-010-22FS	5	10	8.5	4.6	2.2	1.5
LEN0060-15R1-22FS	6	15.1	13.6	6.9	2.2	1.5
LEN0060-20R1-20FS	6	20.1	18.7	9.2	2	1.5
LEN0060-30R1-18FS	6	30.1	28.9	13.8	1.8	1.5
LEN0063-010-28FS	6.3	10	8.1	4.58	2.75	1.5
LEN0063-12R5-24FS	6.3	12.5	10.8	5.73	2.44	1.5
LEN0063-015-23FS	6.3	15	13.4	6.88	2.26	1.5
LEN0063-020-21FS	6.3	20	18.5	9.17	2.06	1.5
LEN0063-025-19FS	6.3	25	23.6	11.46	1.94	1.5
LEN0063-040-18FS	6.3	40	38.7	18.34	1.77	1.9
LEN0063-050-17FS	6.3	50	48.8	22.92	1.72	1.5
LEN0100-12R5-44FS	10	12.5	9.4	5.73	4.43	1.5
LEN0100-015-37FS	10	15	12.4	6.88	3.66	1.5
LEN0100-016-33FS	10	16	13.7	7.34	3.3	1.3
LEN0100-020-30FS	10	20	17.9	9.17	3	1.5
LEN0100-025-27FS	10	25	23.1	11.46	2.65	1.5
LEN0100-030-23FS	10	30	28.5	13.8	2.3	1.4
LEN0100-040-27FS	10	40	38.1	18.34	2.7	2
LEN0100-050-26FS	10	50	48.2	22.92	2.56	2
LEN0127-20R1-43FS	12.7	20.1	17.1	9.2	4.3	1.8
LEN0127-025-39FS	12.7	25	22.3	11.46	3.92	2
LEN0127-30R1-33FS	12.7	30.1	27.8	13.8	3.3	1.8
LEN0127-40R1-29FS	12.7	40.1	38.1	18.4	2.9	1.8
LEN0127-50R2-27FS	12.7	50.2	48.3	23	2.7	1.8
LEN0127-75R3-24FS	12.7	75.3	73.6	34.5	2.4	1.8
LEN0127-100-22FS	12.7	100.3	98	46	2.2	1.8
LEN0150-20R5-49FS	15	20.5	17.1	9.4	4.9	1.2
LEN0150-31R6-32FS	15	31.6	29.4	14.49	3.2	1.2
LEN0150-045-26FS	15	45	43.1	20.6	2.6	1.2
LEN0150-063-26FS	15	63	61.1	28.84	2.63	1.5
LEN0160-063-26FS	16	63	61.1	28.84	2.63	1.5
LEN0200-030-60FS	20	30	25.8	13.8	6	1.69
LEN0200-040-50FS	20	40	36.7	18.3	5	2.1

SiO2 Plano Convex Lens

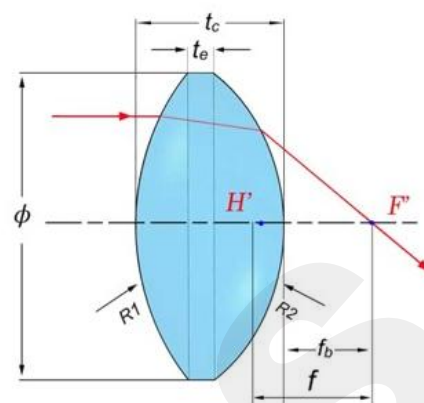
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN0200-060-50FS	20	60	56.6	27.5	5	3.1
LEN0200-080-45FS	20	80	76.7	36.7	4.5	3.1
LEN0200-100-30FS	20	100	98	46	3	1.9
LEN0250-124-34JGS1	25	124.5		57.3	3.42	2.04
LEN0254-030-100FS	25.4	30	23.1	13.8	10	1.53
LEN0254-35R1-82FS	25.4	35.1	29.5	16.1	8.2	2
LEN0254-40R1-71FS	25.4	40.1	35.3	18.4	7.1	2
LEN0254-50R2-58FS	25.4	50.2	46.2	23	5.8	2
LEN0254-060-46FS	25.4	60	56.8	27.5	4.6	1.49
LEN0254-75R3-44FS	25.4	75.3	72.2	34.5	4.4	2
LEN0254-100-38FS	25.4	100.3	97.7	46	3.8	2
LEN0254-125-34FS	25.4	125.4	123.1	57.5	3.4	2
LEN0254-150-32FS	25.4	150.5	148.4	69	3.2	2
LEN0254-175-30FS	25.4	175.6	173.6	80.5	3	2
LEN0254-200-29FS	25.4	200.7	198.7	92	2.9	2
LEN0254-250-27FS	25.4	250.9	249	115	2.7	2
LEN0254-301-26FS	25.4	301.1	299.3	138	2.6	2
LEN0254-400-24FS	25.4	400	398.3	183.39	2.44	2
LEN0254-501-24FS	25.4	501.8	500.2	230	2.4	2
LEN0254-600-30FS	25.4	600	597.9	275.1	3	2.7
LEN0254-752-22FS	25.4	752.6	751.1	345.1	2.2	2
LEN0254-1003-50FS	25.4	1003	1002	460.1	5	2
LEN0255-1003-22FS	25.5	1003	1002	460.1	2.2	2
LEN0508-60R2-198FS	50.8	60.2	46.6	27.6	19.8	3
LEN0508-75R3-142FS	50.8	75.3	65	34.3	14.2	3
LEN0508-100-107FS	50.8	100	93	46	10.7	3
LEN0508-125-80FS	50.8	125	119.5	57.5	8	2.1
LEN0508-150-78FS	50.8	150.5	145.1	69	7.8	3
LEN0508-175-70FS	50.8	175	170.2	80	7	2.9
LEN0508-200-66FS	50.8	200.7	196.2	92	6.6	3
LEN0508-250-90FS	50.8	250.9	246.9	115	9	3
LEN0508-301-54FS	50.8	301.1	297.4	138	5.4	3
LEN0508-400-60FS	50.8	400	395.9	184	6	4.2
LEN0508-501-44FS	50.8	501.8	498.7	230	4.4	3
LEN0508-600-50FS	50.8	600	596.6	276.1	5	3.8
LEN0508-752-39FS	50.8	752.6	750	345.1	3.9	3
LEN0508-800-50FS	50.8	800	796.6	368.1	5	4.1
LEN0508-1003-37FS	50.8	1003	1000	460.1	3.7	3



Double Convex Lens

Specifications:

- **Material:** BK7 or other optical glass, Fused Silica, CaF2, ZnSe
- **Diameter Tolerance:** +0.0, -0.15mm
- **Thickness Tolerance:** +/-0.2mm
- **Paraxial Focal Length:** ±2%
- **Centration:** 3 arc minutes
- **Surface Quality:** 60-40 scratch and dig
- **Surface Figure:** $\lambda/4@632.8\text{nm}$
- **Clear Aperture:** >85%
- **Coating:** Customer specified



Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	-R2 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN1020-002-16R3	2	2	1.3	1.73	1.73	1.63	1	
LEN1020-2R5-14R6	2	2.5	1.9	2.3	2.3	1.46	1	
LEN1030-003-19	3	3	2.2	2.73	2.73	1.9	1	
LEN1030-6R3-13R6	3	6.3	5.8	6.27	6.27	1.36	1	
LEN1040-004-21R6	4	4	3.2	3.73	3.73	2.16	1	
LEN1050-4R5-26R5	5	4.5	3.7	4.28	4.28	2.65	1	
LEN1050-9R7-26ZF7LA	5	9.7		47.35	9.32	2.6	2.19	H-ZF7LA
LEN1055-4R1-31R5LaK1	5.5	4.1		3.55	7.34	3.15	1.325	H-LaK1
LEN1060-010-24	6	10		9.88		2.4	1.5	
LEN1060-010-60	6	10	7.6	9.1	9.1	6	4.98	
LEN1060-012-23	6	12		11.96		2.3	1.5	
LEN1060-015-21	6	15		15.09		2.1	1.5	
LEN1060-21R9-18	6	21.9		58.34	14	1.8		
LEN1060-030-15	6	30		30.6		1.8	1.5	
LEN1060-030-23	6	30	29.2	30.62	30.62	2.3	2	
LEN1063-6R3-33R4	6.3	6.3	5	5.86	5.86	3.34	1.5	
LEN1080-10R1-25	8	10.1		10	10	2.5		
LEN1100-010-48R7	10	10	8.2	9.42	9.42	4.87	2	
LEN1100-12R5-36R3	10	12.5	11.2	12.27	12.27	3.63	2	
LEN1050-24R3-30-ZLAF50E	10	24.3		88.44	24.151	3		H-ZLAF50E
LEN1120-11R8-57	12	11.7		7.3	26.6	5.7		
LEN1125-12R5-55R5	12.5	12.5	10.5	11.89	11.89	5.55	2	
LEN1125-025-26	12.5	25	24.1	25.4	25.4	2.6	1.04	
LEN1127-015-47	12.7	15		14.64		4.7	1.8	
LEN1127-020-39	12.7	20		19.92		3.9	1.8	
LEN1127-025-34	12.7	25		25.16		3.4	1.8	
LEN1127-030-31	12.7	30		30.37		3.1	1.8	

Double Convex Lens

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	-R2 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN1127-040-28	12.7	40		40.73		2.8	1.8	
LEN1127-050-26	12.7	50		51.06		2.6	1.8	
LEN1127-100-22	12.7	100		102.64		2.2	1.8	
LEN1128-020-30	12.9	20	18.9	20.15	20.15	3	0.9	
LEN1130-18R2-44	13	18.2	16.6	18	18	4.4	1.97	
LEN1150-030-37	15	30		30.37	30.37	3.7		
LEN1160-016-65R1	16	16	13.6	15.31	15.31	6.51	2	
LEN1160-030-37	16	30		30.37	30.37	3.7		
LEN1165-25R9-52	16.5	25.9		26	26	5.2	2.513	
LEN1180-25R8-50	18	25.8		25.946	25.946	5		
LEN1200-20R7-40ZF52	20	20.7		44.86	28.12	4	1.03	H-ZF52
LEN1200-023-47LAK51A	20	23		150	17	4.65		LAK51A
LEN1220-30R6-53LAK50A	22	30.5		38.937	38.937	5.31		H-LAK50A
LEN1230-26R2-70	23	26.2		33.135	21.376	7		
LEN1250-025-89R6	25	25	21.8	24.19	24.19	8.96	2	
LEN1250-39R8-53	25	39.8		40.42	40.42	5.3	1.34	
LEN1250-040-55	25	40	38.1	40.4	40.4	5.5	1.6	
LEN1254-25R4-90	25.4	25.4		24.53		9	1.9	
LEN1254-030-77	25.4	30		29.54		7.7	2	
LEN1254-035-68	25.4	35		34.86		6.8	2	
LEN1254-38R1-65	25.4	38.1		89.168	24.776	6.48		
LEN1254-040-61	25.4	40		40.14		6.1	2	
LEN1254-050-52	25.4	50		50.61		5.2	2	
LEN1254-060-47	25.4	60		61		4.7	2	
LEN1254-075-41	25.4	75		76.56		4.1	2	
LEN1254-100-36	25.4	100		102.4		3.6	2	
LEN1254-125-33	25.4	125		129.1	129.1	3.3		
LEN1254-150-31	25.4	150		154		3.1	2	
LEN1254-175-29	25.4	175		179.79		2.9	2	
LEN1254-200-28	25.4	200		205.56		2.8	2	
LEN1254-250-26	25.4	250		257.1		2.6	2	
LEN1254-300-25	25.4	300		308.63		2.5	2	
LEN1254-400-24	25.4	400		411.66		2.4	2	



Double Convex Lens

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1(mm)	-R2 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN1254-500-23	25.4	500		514.7		2.3	2	
LEN1254-750-22	25.4	750		772.56		2.2	2	
LEN1254-100-22	25.4	1000		1029.81		2.2	2	
LEN1400-040-136	40	40	35.24	38.85	38.85	13.59	2.5	
LEN1400-100-80	40	100	97	101.994	101.994	8	4	
LEN1400-150-60	40	150	148.5	154.012	154.012	6	4	
LEN1400-250-56	40	250	247.9	257.441	257.441	5.6	4	
LEN1500-050-168	50	50	44.1	48.59	48.59	16.85	3	
LEN1500-50-154	50	50	44.6	2		49.1	15.4	
LEN1500-100-100	50	100	96.6	101.9	101.9	10	3.9	
LEN1500-150-90	50	150	147	154	154	9	4.96	
LEN1500-200-50	50	200	198.3	206.55	206.55	5.03	2	
LEN1500-250-50	50	250	248.4	258.4	258.4	5	2.58	
LEN1508-060-144	50.8	60		59.26		14.4	3	
LEN1508-075-118	50.8	75		75.2		11.8	3	
LEN1508-100-95	50.8	100		101.38		9.5	3	
LEN1508-125-81	50.8	125		127.38		8.1	3	
LEN1508-150-72	50.8	150		153.29		7.2	3	
LEN1508-175-66	50.8	175		179.15		6.6	3	
LEN1508-200-62	50.8	200		204.98		6.2	3	
LEN1508-250-55	50.8	250		256.61		5.5	3	
LEN1508-300-51	50.8	300		308.29		5.1	3	
LEN1508-400-46	50.8	400		411.29		4.6	3	
LEN1508-500-43	50.8	500		514.36		4.3	3	
LEN1508-750-38	50.8	750		771.99		3.8	3	
LEN1508-1000-36	50.8	1000		1029.57		3.6	3	
LEN1630-063-204	63	63	55.8	61.39	61.39	20.4	3	
LEN1750-100-170	75	100	94.2	100.7	100.7	17	2.7	
LEN1750-150-120	75	150	146	153.5	153.5	12	2.7	
LEN1750-200-100	75	200	196.6	205.6	205.6	10	3.12	
LEN1750-300-90	75	300	297	309.5	309.5	9	4.5	
LEN1750-400-90	75	400	397	413.27	413.27	9	5.6	
LEN11000-100-315	100	100	89.9	98.5	98.5	31.52	4	



Double Convex Lens

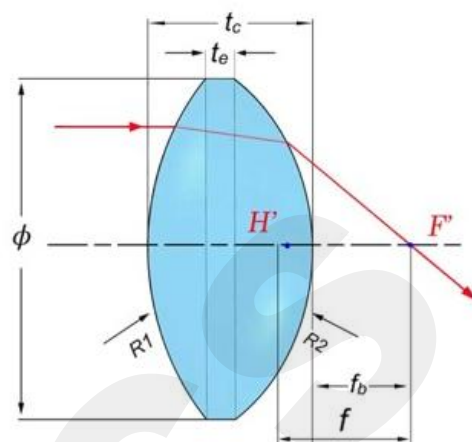
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1(mm)	-R2 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN11000-150-190	100	150	143.6	152.25	152.25	19	2.2	
LEN11000-200-160	100	200	194.6	204.64	204.64	16	3.7	
LEN11000-300-120	100	300	296	309.05	309.05	12	3.9	
LEN11000-400-120	100	400	396	412.95	412.95	12	5.95	
LEN11000-500-100	100	500	496.7	516.8	516.8	10	5.17	
LEN11500-300-240	150	300	292	306.97	306.97	24	5.51	
LEN11500-400-181	150	400	394	411.7	411.7	18.1	4.38	
LEN11500-500-160	150	500	494.6	515.77	515.77	16	5.1	
LEN11500-600-150	150	600	595	619.65	619.65	15	5.94	
LEN11500-700-130	150	700	695.7	723.7	723.7	13	5.22	
LEN11500-800-120	150	800	796	827.58	827.58	12	5.21	
LEN12000-500-240	200	500	492	514.39	514.39	24	4.44	
LEN12000-600-210	200	600	593	618.62	618.62	21	4.78	
LEN12000-700-190	200	700	693.7	722.67	722.67	19	5.13	
LEN12000-800-180	200	800	794	826.55	826.55	18	5.88	
LEN12000-900-170	200	900	894.3	930.43	930.43	17	6.25	
LEN12000-1000-170	200	1000	994.3	1034.13	1034.1	17	7.33	
LEN12500-800-280	250	800	790.7	824.84	824.84	28	9.02	
LEN12500-900-270	250	900	891	928.7	928.7	27	10.18	
LEN12500-1000-260	250	1000	991.4	1032.58	1032.6	26	10.86	
LEN12500-1200-250	250	1200	1191	1240.17	1240.2	25	12.43	
LEN12500-1400-260	250	1400	1391	1447.41	1447.4	26	15.23	
LEN13000-1000-349	300	1000	988.4	1031.05	1031.1	34.9	13.06	
LEN13000-1100-350	300	1100	1088	1134.74	1134.7	35	15.19	
LEN13000-1200-340	300	1200	1188	1238.62	1238.6	34	15.87	
LEN13000-1300-320	300	1300	1289	1342.67	1342.7	32	15.28	
LEN13000-1400-320	300	1400	1389	1446.38	1446.4	32	16.47	
LEN13000-1500-320	300	1500	1489	1549.69	1549.7	32	17.5	



SiO₂ Double Convex Lens

Specifications:

- **Material:** Fused Silica
- **Diameter Tolerance:** +0.0, -0.15mm
- **Thickness Tolerance:** +/-0.2mm
- **Paraxial Focal Length:** ±2%
- **Centration:** 3 arc minutes
- **Surface Quality:** 60-40 scratch and dig
- **Surface Figure:** λ/4@632.8nm
- **Clear Aperture:** >85%
- **Coating:** Customer specified



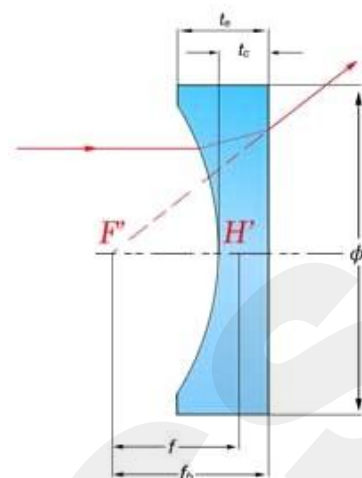
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1=-R2 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN1040-004-30FS	4	4	2.8	3.12	2.96	1.5
LEN1060-010-30FS	6	10	8.6	8.68	3	1.93
LEN1060-016-16FS	6	16	15.4	14.42	1.63	1
LEN1063-6R3-37FS	6.3	6.3	4.88	5.13	3.67	1.5
LEN1100-010-48FS	10	10	8.1	8.34	4.83	1.5
LEN1120-11R9-70R9	12	11.9		9.74	7.09	2.96
LEN1127-12R7-63FS	12.7	12.7	10.3	10.54	6.26	2
LEN1127-015-54FS	12.7	15	13	12.86	5.36	2
LEN1150-015-54FS	15	15	13	12.91	5.4	0.6
LEN1160-016-67FS	16	16	13.5	13.523	6.7	1.5
LEN1200-23R7-60JGS1	20	23.7	21.6	20.88	6	0.9
LEN1200-33R7-50JGS1	20	33.7	31.9	30.24	5	1.597
LEN1254-25R4-103FS	25.4	25.4	21.5	21.55	10.28	2
LEN1254-030-86FS	25.4	30	26.8	26.09	8.6	2
LEN1254-61R8-40FS	25.4	61.8	60.3	26	3.96	1
LEN1254-100-38FS	25.4	100	98.6	91.09	3.78	2
LEN1254-300-31FS	25.4	300	298.9	274.6	3.09	2.5
LEN1254-500-34FS	25.4	500	493.8	457.93	3.35	3
LEN1254-800-32FS	25.4	800	798.8	733	3.22	3
LEN1504-075-125FS	50.38	75	70.6	67	12.5	2.5
LEN1508-100-103FS	50.8	100	96.4	90.4	10.3	3
LEN1508-150-78FS	50.8	150	147.3	136.8	7.8	3
LEN1508-200-65FS	50.8	200	197.7	183	6.5	3
LEN1508-250-58FS	50.8	250	248	229.1	5.8	3
LEN1508-300-54FS	50.8	300	298.2	275.2	5.4	3
LEN1508-500-44FS	50.8	500	498.5	459.4	4.4	3
LEN1508-1000-37FS	50.8	1000	998.7	919.6	3.7	3



K9 Plano Concave Lens

Specifications:

- **Material:** BK7 or other optical glass, Fused Silica, CaF2, ZnSe
- **Diameter Tolerance:** +0.0, -0.15mm
- **Thickness Tolerance:** +/-0.2mm
- **Paraxial Focal Length:** ±2%
- **Centration:** 3 arc minutes
- **Surface Quality:** 60-40 scratch and dig
- **Surface Figure:** $\lambda/4@632.8\text{nm}$
- **Clear Aperture:** >85%
- **Coating:** Customer specified



Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1(mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN2040-M005-15	4	-5	-6	-2.582	1.5	2.45
LEN2040-M6R3-15	4	-6.3	-7.3	-3.253	1.5	2.19
LEN2040-M010-15	4	-10	-11	-5.17	1.5	1.9
LEN2063-M008-15	6.3	-8	-9	-4.13	1.5	2.96
LEN2063-M010-15	6.3	-10	-11	-5.17	1.5	2.57
LEN2063-M12R5-15	6.3	-12.5	-13.5	-6.46	1.5	2.32
LEN2063-M016-15	6.3	-16	-17	-8.26	1.5	2.12
LEN2063-M016-16	6.3	-16	-17	-8.26	1.6	2.12
LEN2063-M020-15	6.3	-20	-21	-10.33	1.5	1.99
LEN2063-M025-15	6.3	-25	-26	-12.91	1.5	1.89
LEN2063-M040-15	6.3	-40	-41	-20.65	1.5	1.71
LEN2100-M12R5-15	10	-12.5	-13.5	-6.46	1.5	3.87
LEN2100-M016-15	10	-16	-17	-8.26	1.5	3.19
LEN2100-M020-15	10	-20	-21	-10.327	1.5	2.79
LEN2100-M025-15	10	-25	-26	-12.91	1.5	2.51
LEN2100-M31R5-15	10	-31.5	-32.5	-16.27	1.5	2.29
LEN2100-M040-15	10	-40	-41	-20.65	1.5	2.11
LEN2100-M050-15	10	-50	-51.1	-25.84	1.5	1.99
LEN2100-M063-15	10	-63	-64	-32.5	1.5	1.89
LEN2100-M100-15	10	-100	-101	-51.64	1.5	1.74
LEN2127-M63R5-20	12.7	-63.5		-32.94	2	
LEN2160-M020-15	16	-20	-21	-10.33	1.5	5.29
LEN2160-M025-15	16	-25	-26	-12.91	1.5	4.22
LEN2160-M31R5-15	16	-31.5	-32.5	-16.27	1.5	3.6
LEN2160-M040-15	16	-40	-41	-20.65	1.5	3.11
LEN2160-M050-15	16	-50	-51.7	-25.84	1.5	2.77
LEN2160-M063-15	16	-63	-64	-32.5	1.5	2.5
LEN2160-M080-15	16	-80	-81	-41.3	1.5	2.28
LEN2160-M100-15	16	-100	-101	-51.64	1.5	2.12



K9 Plano Concave Lens

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN2160-M160-15	16	-160	-161	-82.62	1.5	1.89
LEN2200-M050-21	20	-50	-51.4	-25.84	2.1	4.11
LEN2250-M25R4-20	25	-25.4	-26.8	-13.11	2	11.16
LEN2250-M31R5-20	25	-31.5	-32.9	-16.27	2	7.86
LEN2250-M040-20	25	-40	-41	-20.65	2	6.21
LEN2250-M050-20	25	-50	-51.4	-25.84	2	5.22
LEN2250-M063-20	25	-63	-64.3	-32.5	2	4.5
LEN2250-M080-20	25	-80	-81.3	-41.3	2	3.94
LEN2250-M100-20	25	-100	-101.3	-51.64	2	3.54
LEN2250-M125-20	25	-125	-126.3	-64.55	2	3.22
LEN2250-M160-20	25	-160	-161.3	-82.62	2	2.95
LEN2250-M200-20	25	-200	-201.3	-103.28	2	2.75
LEN2250-M250-20	25	-250	-251.4	-129.13	2	2.61
LEN2250-M400-20	25	-400	-400.5	-206.1	2	2.38
LEN2250-M500-20	25	-500	-501.3	-258.18	2	2.3
LEN2250-M1000-20	25	-1000	-1001	-516.5	2	2.15
LEN2250-M600-20	25	-600	-501.3	-258.18	2	2.3
LEN2340-M170-33	34	-170	-172.5	-88	3.25	4.91
LEN2400-M050-25	40	-50	-51.7	-25.84	2.5	11.98
LEN2400-M063-25	40	-63	-64.6	-32.5	2.5	9.38
LEN2400-M080-25	40	-80	-81.7	-41.3	2.5	7.57
LEN2400-M100-25	40	-100	-101.7	-51.64	2.5	6.53
LEN2400-M125-25	40	-125	-126.7	-64.55	2.5	5.68
LEN2400-M160-25	40	-160	-161.7	-82.62	2.5	4.96
LEN2400-M200-25	40	-200	-201.6	-103.28	2.5	4.46
LEN2400-M250-25	40	-250	-251.9	-129.24	2.5	4.06
LEN2400-M500-25	40	-500	-501.6	-258.18	2.5	3.28
LEN2450-M150-30	45	-150	-152	-77.52	3	6.34
LEN2500-M063-30	50	-63	-65	-32.5	3	14.73
LEN2500-M080-30	50	-80	-82	-41.3	3	11.43
LEN2500-M100-30	50	-100	-102	-51.64	3	9.45
LEN2500-M160-30	50	-160	-162	-82.62	3	6.87
LEN2500-M250-30	50	-250	-252.3	-129.24	3	5.11
LEN2500-M500-30	50	-500	-502	-258.18	3	4.21
LEN2500-M100-50	50	-100	-103.3	-51.68	5	11.04



K9 Plano Concave Lens

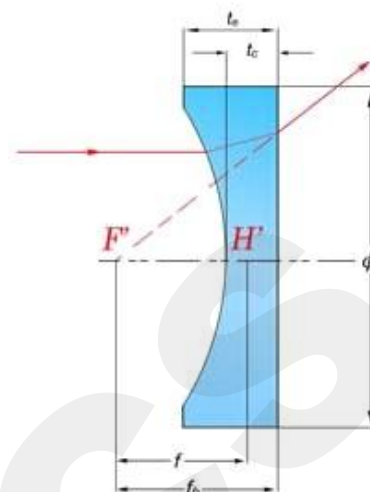
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN2500-M125-50	50	-125	-128.3	-64.6	5	9.72
LEN2750-M150-50	75	-150	-153.3	-77.78	5	14.63
LEN2750-M200-50	75	-200	-203.3	-103.7	5	12.01
LEN21000-M200-60	100	-200	-204	-103.7	6	18.85
LEN21000-M250-60	100	-250	-204	-129.63	6	16.03
LEN21000-M300-62	100	-300	-304.1	-155.56	6.2	14.45
LEN21000-M400-82	100	-400	-405.4	-207.4	8.2	14.32
LEN21000-M500-80	100	-500	-505.3	-259.26	8	12.87
LEN21000-M600-96	100	-600	-606.4	-311.11	9.6	13.64
LEN21250-M300-42	125	-300	-302.8	-155.56	4.2	17.3
LEN21250-M400-56	125	-400	-403.7	-207.4	5.6	15.24
LEN21250-M500-60	125	-500	-504.6	-259.26	6	13.64
LEN21250-M600-90	125	-600	-606.4	-311.11	9	15.34
LEN21250-M700-84	125	-700	-705.6	-362.96	8.4	13.82
LEN21250-M800-96	125	-800	-806.4	-414.82	9.6	14.34
LEN21500-M400-50	150	-400	-403.3	-207.41	5	19.03
LEN21500-M500-62	150	-500	-504.2	-259.26	6.2	17.29
LEN21500-M600-75	150	-600	-605	-311.11	7.5	16.68
LEN21500-M700-90	150	-700	-705.8	-362.96	9	16.83
LEN21500-M800-80	150	-800	-805.3	-414.82	8	14.84
LEN22000-M500-66	200	-500	-504.4	-259.26	6.57	26.63
LEN22000-M600-78	200	-600	-605.2	-311.11	7.8	24.31
LEN22000-M700-92	200	-700	-706.1	-362.96	9.2	23.25
LEN22000-M800-105	200	-800	-807	-414.82	10.5	22.73
LEN22000-M900-118	200	-900	-907.8	-466.67	11.8	22.64
LEN22000-M1000-131	200	-1000	-1008	-518.52	13.1	22.83
LEN22500-M700-60	250	-700	-704	-362.96	6	28.2
LEN22500-M800-69	250	-800	-804.6	-414.82	6.9	26.18
LEN22500-M900-80	250	-900	-905.3	-466.67	8	25.05
LEN22500-M1000-95	250	-1000	-1006	-518.52	9.5	28.45
LEN22500-M1100-120	250	-1100	-1107	-570.37	12	25.87
LEN22500-M1200-150	250	-1200	-1209	-622.63	15	27.69
LEN23000-M1000-100	300	-1000	-1006	-518.52	10	32.17
LEN23000-M1200-120	300	-1200	-1207	-622.63	12	30.35
LEN23000-M1400-140	300	-1400	-1409	-725.93	14	29.67
LEN23000-M1600-160	300	-1600	-1610	-829.64	16	29.67



SiO₂ Plano Concave Lens

Specifications:

- **Material:** Fused Silica
- **Diameter Tolerance:** +0.0, -0.15mm
- **Thickness Tolerance:** +/-0.2mm
- **Paraxial Focal Length:** ±2%
- **Centration:** 3 arc minutes
- **Surface Quality:** 60-40 scratch and dig
- **Surface Figure:** λ/4@632.8nm
- **Clear Aperture:** >85%
- **Coating:** Customer specified



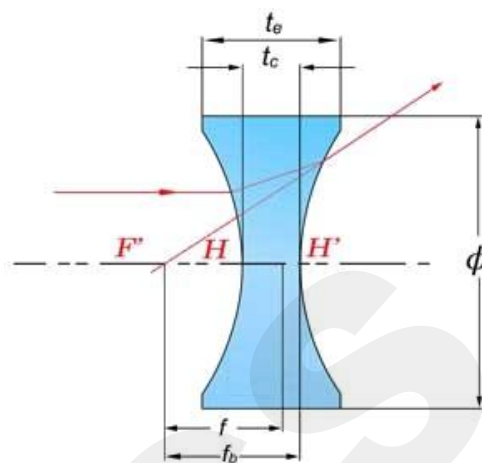
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1(mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN2040-M6R3-15FS	4	-6.3	-7.4	-2.89	1.5	2.3
LEN2040-M010-16FS	4	-10	-11.1	-4.58	1.55	2
LEN2040-M015-17FS	4	-15	-16.2	-6.88	1.71	2
LEN2040-M020-18FS	4	-20	-21.3	-9.17	1.78	2
LEN2063-M010-10FS	6.3	-10	-10.7	-4.58	1	2.25
LEN2063-M12R5-15FS	6.3	-12.5	-13.7	-5.73	1.5	2.44
LEN2063-M015-15FS	6.3	-15	-16.1	-6.88	1.5	2.26
LEN2063-M020-15FS	6.3	-20	-21.1	-9.17	1.5	2.06
LEN2063-M025-15FS	6.3	-25	-26.1	-11.46	1.5	1.94
LEN2063-M040-20FS	6.3	-40	-41.4	-18.34	2	2.27
LEN2063-M050-20FS	6.3	-50	-51.4	-22.92	2	2.22
LEN2100-M12R5-15FS	10	-12.5	-13.6	-5.73	1.5	10
LEN2100-M015-15FS	10	-15	-16.1	-6.88	1.5	10
LEN2100-M020-15FS	10	-20	-21.1	-9.17	1.5	10
LEN2100-M025-15FS	10	-25	-26.1	-11.46	1.5	10
LEN2100-M040-15FS	10	-40	-41.1	-18.34	1.5	10
LEN2100-M050-15FS	10	-50	-51.1	-22.92	1.5	10
LEN2127-M020-15FS	12.7	-20	-21.1	-9.17	1.5	4.05
LEN2127-M025-15FS	12.7	-25	-26.1	-11.46	1.5	3.42
LEN2127-M030-15FS	12.7	-30	-31.1	-13.75	1.5	3.05
LEN2127-M040-15FS	12.7	-40	-41.1	-18.34	1.5	2.63
LEN2127-M060-15FS	12.7	-60	51	-22.92	1.5	2.4
LEN2127-M100-17FS	12.7	-100	-101.1	-45.85	1.7	2.14
LEN2200-M100-30FS	20	-100	-102	-46	3	4.1
LEN2254-M035-20FS	25.4	-35	-36.4	-16.06	2	8.24
LEN2254-M040-15FS	25.4	-40	-41.1	-18.34	1.5	6.61
LEN2254-M050-20FS	25.4	-50	51.3	-22.92	2	5.84
LEN2254-M075-20FS	25.4	-75	-76.4	-34.39	2	4.43
LEN2254-M100-20FS	25.4	-100	-101.4	-45.85	2	3.79
LEN2254-M150-20FS	25.4	-150	-151.4	-68.77	2	3.18
LEN2254-M175-20FS	25.4	-175	-176.4	-80.23	2	3.01
LEN2254-M200-20FS	25.4	-200	-201.4	-91.7	2	2.88
LEN2254-M250-20FS	25.4	-250	-251.4	-114.62	2	2.77
LEN2254-M400-20FS	25.4	-400	-401.4	-183.39	2	2.44



Double Concave Lens

Specifications:

- **Material:** BK7 or other optical glass, Fused Silica, CaF2, ZnSe
- **Diameter Tolerance:** +0.0, -0.15mm
- **Thickness Tolerance:** +/-0.2mm
- **Paraxial Focal Length:** ±2%
- **Centration:** 3 arc minutes
- **Surface Quality:** 60-40 scratch and dig
- **Surface Figure:** $\lambda/4@632.8\text{nm}$
- **Clear Aperture:** >85%
- **Coating:** Customer specified



Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	- R1 (mm)	R2 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN3020-M002-10	2	-2	-2.31	2.22	2.22	1	1.48	
LEN3020-M2R5-10	2	-2.5	-2.81	2.74	2.74	1	1.38	
LEN3030-M003-10	3	-3	-3.31	3.26	3.26	1	1.73	
LEN3030-M6R3-10	3	-6.3	-6.7	6.67	6.67	1	1.34	
LEN3030-M010-10	3	-10	-10.4	10.5	10.5	1	1.22	
LEN3040-M004-10	4	-4	-4.32	4.3	4.3	1	1.99	
LEN3063-M6R3-15	6.3	-6.3	-6.8	6.75	6.75	1.5	3.06	
LEN3090-8R91-22R5ZF13	9	8.91		-14.6		2.25		H-ZF13
LEN3100-M010-15	10	-10	-10.5	10.58	10.58	1.5	4.01	
LEN3125-M12R5-15	12.5	-12.5	-12.5	12.64	12.64	1.5	4.81	
LEN3160-M016-15	16	-16	-16.5	16.78	16.78	1.5	5.56	
LEN3220-M20R8-20F4	22	-20.8		56.747	16.975	2		H-F4
LEN3250-M025-20	25	-25	-25.7	26.16	26.16		2	
LEN3400-M040-25	40	-40	-40.9	41.74	41.74		2.5	
LEN3500-M050-30	50	-50	-51	52.15	52.15		3	
LEN3500-M100-50	50	-100	-101.7	11.3	11.3	-104.55	5	
LEN3500-M100-50	50	-100	-101.7	-104.55	-104.55	5	11.3	
LEN3500-M125-50	50	-125	-126.7	9.95	9.95	-130.48	5	
LEN3750-M150-50	75	-150	-151.8	14.42	14.42	-156.57	5	
LEN3750-M200-50	75	-200	-202	11.94	11.94	-208.54	5	
LEN31000-M250-60	100	-250	-252	15.9	15.9	-260.32	6	
LEN31000-M300-60	100	-300	-302.2	14.18	14.18	-312.34	6	
LEN31000-M400-80	100	-400	-402.7	14.1	14.1	-416.18	8	

Double Concave Lens

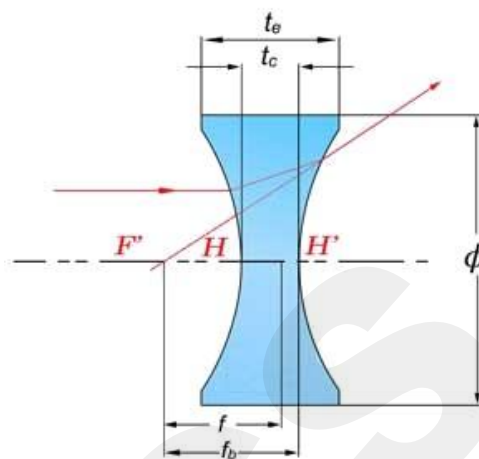
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	- R1 (mm)	R2 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN3500-M125-50	50	-125	-126.7	-130.48	-130.48	5	9.95	
LEN3750-M150-50	75	-150	-151.8	-156.57	-156.57	5	14.42	
LEN3750-M200-50	75	-200	-202	-208.54	-208.54	5	11.94	
LEN31000-M250-60	100	-250	-252	-260.32	-260.32	6	15.9	
LEN31000-M300-60	100	-300	-302.2	-312.34	-312.34	6	14.18	
LEN31000-M400-80	100	-400	-402.7	-416.18	-416.18	8	14.1	
LEN31000-M500-100	100	-500	-503.3	-520.22	-520.22	10	14.86	
LEN31000-M600-120	100	-600	-304	-624.67	-624.67	12	16.05	
LEN31250-M300-60	125	-300	-302	-312.13	-312.13	6	18.91	
LEN31250-M400-80	125	-400	-403.7	-416.18	-416.18	8	17.58	
LEN31250-M500-80	125	-500	-503	-520.22	-520.22	8	15.61	
LEN31250-M600-90	125	-600	-603.1	-632.86	-632.86	9	15.33	
LEN31250-M700-86	125	-700	-703.2	-727.72	-727.72	8.6	14.01	
LEN31250-M800-96	125	-800	-803.2	-831.31	-831.31	9.6	14.33	
LEN31500-M500-80	150	-500	-502.6	-519.8	-519.8	8	19.02	
LEN31500-M600-96	150	-600	-603.2	-623.86	-623.86	9.6	18.74	
LEN31500-M700-95	150	-700	-703.4	-727.84	-727.84	9.5	17.31	
LEN31500-M800-90	150	-800	-803.3	-831.48	-831.48	9	15.82	
LEN32000-M600-90	200	-600	-602.6	-623.38	-623.38	9	25.38	
LEN32000-M700-105	200	-700	-703.5	-727.72	-727.72	10.5	24.47	
LEN32000-M800-120	200	-800	-804	-831.68	-831.68	12	24.2	
LEN32000-M900-135	200	-900	-904.5	-935.64	-935.64	13.5	24.32	
LEN32000-M1000-130	200	-1000	-1004	-1039.6	-1039.6	13	22.71	
LEN32500-M800-104	250	-800	-803.4	-831.4	-831.4	10.4	29.53	
LEN32500-M900-110	250	-900	-903.8	-935.33	-935.33	11	27.95	
LEN32500-M1000-122	250	-1000	-1004	-1039.13	-1039.1	12.2	27.43	
LEN32500-M1100-134	250	-1100	-1104	-1143.04	-1143	13.4	27.22	
LEN32500-M1200-140	250	-1200	-1204	-1246.94	-1246.9	14	26.65	
LEN33000-M1000-110	300	-1000	-1003	-1039.03	-1039	11	33	
LEN33000-M1200-131	300	-1200	-1204	-1246.68	-1246.7	13.1	31.37	
LEN33000-M1400-142	300	-1400	-1404	-1454.47	-1454.5	14.2	29.82	
LEN33000-M1600-162	300	-1600	-1605	-1662.04	-1662	16.2	29.85	



SiO₂ Double Concave Lens

Specifications:

- **Material:** Fused Silica
- **Diameter Tolerance:** +0.0, -0.15mm
- **Thickness Tolerance:** +/-0.2mm
- **Paraxial Focal Length:** ±2%
- **Centration:** 3 arc minutes
- **Surface Quality:** 60-40 scratch and dig
- **Surface Figure:** $\lambda/4@632.8\text{nm}$
- **Clear Aperture:** >85%
- **Coating:** Customer specified



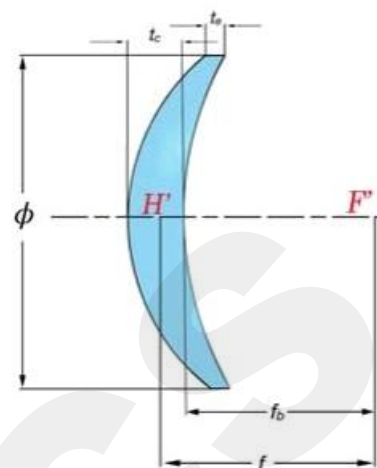
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1=-R2 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN3063-M6R3-20FS	6.3	-6.3	-7	-6.08	2	3.76
LEN3100-M010-20FS	10	-10	-10.7	-9.48	2	4.85
LEN3127-M12R7-20FS	12.7	-12.7	-13.4	-11.95	2	5.65
LEN3127-M015-20FS	12.7	-15	-15.9	-14.12	2.4	5.42
LEN3254-M25R4-20FS	25.4	-25.4	-26.1	-23.6	2	9.42
LEN3254-M030-20FS	25.4	-30	-30.7	-27.82	2	8.14
LEN3254-M050-35FS	25.4	-50	-51.2	-46.6	3.5	7
LEN3254-M075-35FS	25.4	-75	-76.2	-69.6	3.5	5.8
LEN3254-M100-35FS	25.4	-100	-101.2	-92.6	3.5	5.3



Meniscus Lens

Specifications:

- **Material:** BK7 or other optical glass, Fused Silica, CaF2, ZnSe
- **Diameter Tolerance:** +0.0, -0.15mm
- **Thickness Tolerance:** +/-0.2mm
- **Paraxial Focal Length:** ±2%
- **Centration:** 3 arc minutes
- **Surface Quality:** 60-40 scratch and dig
- **Surface Figure:** $\lambda/4@632.8\text{nm}$
- **Clear Aperture:** >85%
- **Coating:** Customer specified



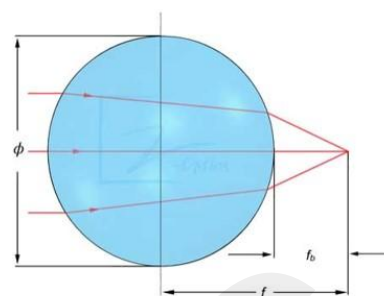
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	R2 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN4100-22R8-30-ZLAF50E	10	22.8		9.1	15.691	3		H-ZLAF50E
LEN4220-32R3-71R5-LAK50A	22	32.3		18.551	127.945	7.158		H-LAK50A
LEN4254-100-40	25.4	100	97.5	33.72	90	4	2.5	
LEN4254-125-40	25.4	125	121.8	38.47	90	4	2.8	
LEN4254-150-40	25.4	150	146.3	42.52	90	4	3	
LEN4254-175-40	25.4	175	171.2	46.05	90	4	3.1	
LEN4254-200-35	25.4	200	197	49.03	90	3.5	2.8	
LEN4254-250-35	25.4	250	296.3	83.96	235	3.5	3	
LEN4254-300-35	25.4	300	296.3	94.08	235	3.5	3	
LEN4254-400-35	25.4	400	395.8	110.72	235	3.5	3.1	
LEN4254-500-35	25.4	500	495.4	123.9	235	3.5	3.2	
LEN4254-800-35	25.4	800	794.5	145.39	600	3.5	3.3	
LEN4254-1500-35	25.4	1500	1492	339.05	600	3.5	3.4	
LEN4254-2000-35	25.4	2000	1990	380.54	600	3.5	3.4	
LEN4254-4000-35	25.4	4000	3984	466.12	600	3.5	3.5	
LEN4254-M-100-30	25.4	-100	-99.2	90	32.59	3	4.5	
LEN4254-M-125-30	25.4	-125	-123.7	90	37.26	3	4.2	
LEN4254-M-150-30	25.4	-150	-149.5	90	41.42	3	4	
LEN4254-M-175-30	25.4	-175	-174.6	90	44.86	3	3.8	
LEN4274-63R2-55	27.4	63.2		17.96	35.553	5.5	1.4	



Ball Lens

Specifications

- **Material:** BK7 or other optical glass, Fused Silica, Sapphire, Ruby, ZnSe, CaF₂
- **Diameter Tolerance:** +/-0.005mm
- **Sphericity:** 0.003mm
- **Surface Quality:** 40-20 scratch and dig
- **(Surface Roughness:** 23.5nm is achieved on sapphire)



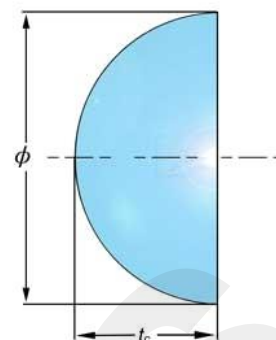
Part No.	Diameter (mm)	Refractive Index	Material
LEN6505-ZLaF60	0.5	1.85	H-ZLaF60
LEN6510	1		
LEN6510-ZF7	1	1.805	H-ZF7LA
LEN6510-LaSF9	1	1.85	N-LaSF9
LEN6512-K4	1.2	1.508	K4A
LEN6515	1.5		
LEN6515-K51	1.5	1.523	H-K51
LEN6515-ZF7	1.5	1.805	H-ZF7LA
LEN6518	1.8		
LEN6519-ZF7	1.9	1.805	H-ZF7LA
LEN6520-ZF62	2	1.923	H-ZF62
LEN6520	2		
LEN6520-ZLaF80	2	2.001	H-ZLaF80
LEN6523	2.3		
LEN6525	2.5		
LEN6525-ZF52	2.5	1.847	H-ZF52
LEN6530	3		
LEN6530-LaF10	3	1.788	H-LaF10LA
LEN6540	4		
LEN6540-ZF10	4	1.688	ZF10
LEN6540-ZF7	4	1.805	H-ZF7LA
LEN6550	5		
LEN6550-SiO2	5	1.458	SiO2
LEN6550-F4	5	1.62	H-F4
LEN6552-ZF7	5.2	1.805	H-ZF7LA
LEN6556-FS	5.6	1.458	Fused Silica
LEN6557	5.7		
LEN6560	6		
LEN6564	6.35		
LEN6565	6.5		
LEN6580	8		
LEN6580-FS	8	1.458	Fused Silica
LEN6600	10		
LEN6620	12		
LEN6630	13		
LEN6660	16		



Half Ball Lens

Specifications

- **Material:** BK7, B270, Borosilicate glass, UV Fused Silica, Sapphire, ZnSe or any other glass/crystal material
- **Diameter Tolerance:** +/-0.05
- **Height (tc):** 0~full diameter
- **Height Tolerance:** +/-0.05
- **Surface Quality:** 60-40 scratch and dig
- **(Surface Roughness:** 23.5nm is achieved on sapphire)
- **Chamfer:** <0.2mm, <0.1mm



Part Number	Φ (mm)	R (mm)	Tc (mm)	Refractive Index	Material
LEN605-2R5-ZLaF60	0.5	0.25	0.25	1.85	H- ZLaF60
LEN6010-5-ZF7LA	1	0.5	0.5	1.805	H-ZF7LA
LEN6010-5-ZLaF80	1	0.5	0.5	2.001	H-ZLaF80
LEN6010-5-ZLaF90	1		0.5		ZLaF90
LEN6013-6R3	1.27	0.635	0.63		
LEN6013-4R7	1.27	0.635	0.47		
LEN6015-7R5	1.5	0.75	0.75		
LEN6015-7R5-SP	1.5	0.75	0.75		Sapphire
LEN6015-7R5-FS	1.5	0.75	0.75		Fused Silica
LEN6015-7R5-JGS1	1.5		0.75		JGS1
LEN6015-7R5-JGS2	1.5		0.75		JGS2
LEN6015-7R5-SP	1.5		0.75		Sapphire
LEN6020-10	2	1	1		
LEN6020-10-ZlaF80	2	1	1	2.001	H-ZlaF80
LEN6020-10-SP	2	1	1		Sapphire
LEN6020-10-FS	2	1	1		Fused Silica
LEN6020-10-JGS1	2		1		JGS1
LEN6020-10-JGS2	2		1		JGS2
LEN6020-10-SP	2		1		Sapphire
LEN6025-12R5	2.5	1.25	1.25		
LEN6025-12R5-BaK6	2.5	1.25	1.25	1.564	H-BaK6
LEN6025-12R5-LaF10LA	2.5	1.25	1.25	1.788	H-LaF10LA
LEN6025-12R5-SP	2.5	1.25	1.25		Sapphire
LEN6025-12R5-FS	2.5	1.25	1.25		Fused Silica
LEN6025-12R5-JGS1	2.5		1.25		JGS1
LEN6025-12R5-JGS2	2.5		1.25		JGS2
LEN6025-12R5-SP	2.5		1.25		Sapphire



Half Ball Lens

Part Number	Φ (mm)	R (mm)	Tc (mm)	Refractive Index	Material
LEN6028-17	2.8	1.4	1.7		
LEN6028-17-FS	2.8	1.4	1.7		Fused Silica
LEN6028-23-FS	2.8	1.4	2.3		Fused Silica
LEN6029-14R5	2.9	1.45	1.45		
LEN6030-11	3	1.5	1.1		
LEN6030-15	3	1.5	1.5		
LEN6030-16-FS	3	1.5	1.6		Fused Silica
LEN6030-17-FS	3	1.5	1.7		Fused Silica
LEN6030-15-ZnSe	3	1.5	1.5		ZnSe
LEN6030-15-SP	3	1.5	1.5		Sapphire
LEN6030-15-FS	3	1.5	1.5		Fused Silica
LEN6030-15-JGS1	3		1.5		JGS1
LEN6030-15-JGS2	3		1.5		JGS2
LEN6030-15-SP	3		1.5		Sapphire
LEN6030-15-ZnSe	3		1.5		ZnSe
LEN6031-20	3.05	1.525	2		
LEN6032-16	3.2		1.6		
LEN6033-16R3	3.25	1.625	1.625		
LEN6033-16	3.25	1.625	1.6		
LEN6035-17R5	3.5	1.75	1.75		
LEN6035-17R5-JGS1	3.5		1.75		JGS1
LEN6035-17R5-JGS2	3.5		1.75		JGS2
LEN6035-17R5-SP	3.5		1.75		Sapphire
LEN6035-17R5-SP	3.5	1.75	1.75		Sapphire
LEN6035-17R5-FS	3.5	1.75	1.75		Fused Silica
LEN6036-18	3.6	1.8	1.8		
LEN6040-20-ZnSe	4		2		ZnSe
LEN6040-20-LaF10LA	4	2	2	1.788	H-LaF10LA
LEN6040-20-ZF7LA	4	2	2	1.805	H-ZF7LA
LEN6040-20	4	2	2		
LEN6045-22R5	4.5	2.25	2.25		
LEN6047-23R5	4.7	2.35	2.35		
LEN6050-33	5	2.5	3.3		
LEN6050-25-F4	5	2.5	2.5	1.62	H-F4
LEN6050-25	5	2.5	2.5		
LEN6050-30	5	2.5	3		
LEN6050-25-ZnSe	5	2.5	2.5		ZnSe

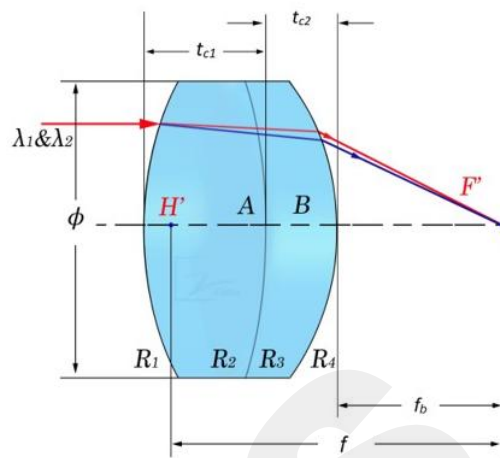


Half Ball Lens

Part Number	Φ (mm)	R (mm)	Tc (mm)	Refractive Index	Material
LEN6056-28	5.6	2.8	2.8		
LEN6056-33	5.6	2.8	3.3		
LEN6058-27	5.75	2.9	2.7		
LEN6058-27-F4	5.75	2.9	2.7	1.62	H-F4
LEN6060-30	6	3	3		
LEN6060-55	6	3	5.5		
LEN6060-25	6	3	2.5		
LEN6060-37	6	3	3.7		
LEN6064-31R7	6.35	3.175	3.17		
LEN6065-32R5	6.5	3.25	3.25		
LEN6070-35	7	3.5	3.5		
LEN6080-30	8	4	3		
LEN6080-40	8	4	4		
LEN6080-50	8	4	5		
LEN6080-60	8	4	6		
LEN6080-60-ZF3	8	4	6	1.717	H-ZF3
LEN6080-40-FS	8	4	4	1.458	Fused Silica
LEN6090-45	9	4.5	4.5		
LEN6100-50	10	5	5		
LEN6100-45	10	5	4.5		
LEN6120-60	12	6	6		
LEN6127-63R5	12.7	6.35	6.35		
LEN6140-70	14	7	7		
LEN6150-75	15	7.5	7.5		
LEN6160-80	16	8	8		
LEN6254-127-LASFH17	25.4		12.7	2.0	J-LASFH17



Achromatic Positive Lens



400nm – 700nm

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN5030-004-ZBAF52/ZF7LA	3	4	2.5	2.9	2.32	H-ZBAF52/H-ZF7LA
LEN5040-005-ZBAF52/ZF7LA	4	5	3.1	3.6	2.77	H-ZBAF52/H-ZF7LA
LEN5040-6R3-Bak2/SF15	4	6.3	4.8	3.6	2.78	Bak2/SF15
LEN5050-7R6-BAF10/SF6HT	5	7.5	5.2	4.5	3.7	N-BAF10/N-SF6HT
LEN5050-010-BAK4/SF5	5	10	7.9	4.4	3.7	N-BAK4/SF5
LEN5050-015-BK7/SF2	5	15	13.6	4.8	4.3	N-BK7/SF2
LEN5060-010-LAK22/SF6HT	6	10	8.1	4	3.1	N-LAK22/N-SF6HT
LEN5063-008-ZBAF52/ZF7LA	6.3	8	4.99	5.7	4.42	H-ZBAF52/H-ZF7LA
LEN5063-010-Bak2/SF15	6.3	10	7.5	5.69	4.41	Bak2/SF15
LEN5063-12R5-Bak2/SF15	6.3	12.5	10.4	4.44	3.47	Bak2/SF15
LEN5063-016-Bak2/SF15	6.3	16	14.1	4	3.26	Bak2/SF15
LEN5063-025-BK7/SF12	6.3	25	23.4	3.63	3.15	BK7/SF12
LEN5063-040-BK7/SF12	6.3	40	38.5	3.31	3.01	BK7/SF12
LEN5063-12R7-BAK4/SF5	6.35	12.7	10.3	4	3.1	N-BAK4/SF5
LEN5063-015-BK7/SF2	6.35	15	13	4	3.2	N-BK7/SF2
LEN5080-010-BAF10/SF6HT	8	10	6.7	6.5	4.9	N-BAF10/N-SF6HT
LEN5080-016-Bak2/SF15	8	16	13.7	5.1	3.89	Bak2/SF15
LEN5080-020-N-BK7/SF2	8	20	17.8	4	3	N-BK7/SF2
LEN5100-016-ZBAF52/ZF7LA	10	16	12.6	6.3	4.79	H-ZBAF52/H-ZF7LA
LEN5100-020-Bak2/SF15	10	20	17.2	6.37	4.86	Bak2/SF15
LEN5100-025-Bak2/SF15	10	25	22.9	4.54	3.37	Bak2/SF15
LEN5100-040-BK7/SF12	10	40	38	4.29	3.54	N-BK7/SF12
LEN5100-063-BK7/SF12	10	63	61.2	4.02	3.55	N-BK7/SF12
LEN5125-31R5-Bak2/SF15	12.5	31.5	28.8	5.74	4.28	Bak2/SF15
LEN5125-19R9-ZBaF16/ZF4	12.5	19.9		6.35	4.62	H-ZBaF16/H-ZF4
LEN5125-050-K9L/ZF2	12.5	50		5	4.06	H-K9L/H-ZF2
LEN5127-019-BAF10/SF6HT	12.7	19	15.7	6	4	N-BAF10/N-SF6HT
LEN5127-025-BAF10/SF10	12.7	25	21.5	7	5.6	N-BAF10/SF10
LEN5127-030-BK7/SF2	12.7	30	27.5	5	3.4	N-BK7/SF2
LEN5127-050-BK7/SF2	12.7	50	47.2	5	4	N-BK7/SF2
LEN5127-075-BK7/SF2	12.7	75	72.9	4	3.4	N-BK7/SF2
LEN5150-050-BAK2/SF15	15	50	47.8	4.7	3.4	BAK2/SF15
LEN5156-050-FK61/TF3L	15.6	50		7.376		H-FK61/H-TF3L
LEN5160-025-ZBAF52/ZF7LA	16	25	19.8	9.4	6.94	H-ZBAF52/H-ZF7LA
LEN5160-31R5-Bak2/SF15	16	31.5	27.8	7.71	5.28	Bak2/SF15
LEN5160-040-Bak2/SF15	16	40	36.6	7.29	5.41	Bak2/SF15
LEN5160-050-Bak2/SF15	16	50	47.3	5.6	4.12	Bak2/SF15
LEN5160-063-BK7/SF12	16	63	60.4	5.26	4.04	BK7/SF12
LEN5160-100-BK7/SF12	16	100	97.5	5.32	4.55	BK7/SF12
LEN5180-060-BaK7/ZF4	18	60		5.2	3.73	H-BaK7/H-ZF4
LEN5200-063-BaK2/SF15	20	63	59.6	7.05	5.21	BaK2/SF15
LEN5200-060-Bak2/SF15	20	80	77.4	5.58	4.14	Bak2/SF15
LEN5230-85R9-K9L/ZF2	23	85.98	55.38	11.8		H-K9L/H-ZF2
LEN5250-040-ZBAF52/ZF7LA	25	40	34.4	10.5	6.85	H-ZBAF52/H-ZF7LA
LEN5250-050-Bak2/SF15	25	50	45.1	10.3	6.61	Bak2/SF15



Achromatic Positive Lens : 400nm – 700nm

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN5250-060-Bak7/ZF6A	25	60		11.4		H-Bak7/H-ZF6A
LEN5250-060-Bak7/ZF6	25	60	54.38	11.4		H-Bak7/H-ZF6
LEN5250-063-Bak2/SF15	25	63	58.6	9.21	6.32	Bak2/SF15
LEN5250-060-Bak2/SF15	25	80	76.3	7.7	5.44	Bak2/SF15
LEN5250-100-Bak2/SF15	25	100	96.7	6.98	5.18	Bak2/SF15
LEN5250-125-Bak2/SF15	25	125	122.2	5.74	4.31	Bak2/SF15
LEN5250-160-BK7/SF12	25	160	157.5	4.9	3.74	BK7/SF12
LEN5250-200-BK7/SF12	25	200	197.1	5.66	4.73	BK7/SF12
LEN5250-250-BK7/SF12	25	250	247.7	4.22	3.48	BK7/SF12
LEN5250-315-BK7/SF12	25	315	312.3	5.01	4.42	BK7/SF12
LEN5250-400-BK7/SF12	25	400	397.3	4.8	4.34	BK7/SF12
LEN5250-500-BK7/SF12	25	500	497	4.64	4.27	BK7/SF12
LEN5254-030-BAF10/SF6HT	25.4	30	22.9	14	8.8	N-BAF10/N-SF6HT
LEN5254-035-BAF10/SF6EHT	25.4	35	27.3	14	9.6	N-BAF10/N-SF6EHT
LEN5254-040-BK7/SF5	25.4	40	33.4	12.5	7.4	N-BK7/SF5
LEN5254-045-BAF10/SF6HT	25.4	45	40.2	9	5.7	N-BAF10/N-SF6HT
LEN5254-050-BAF10/SF10	25.4	50	43.4	11.5	8.7	N-BAF10/SF10
LEN5254-060-BAF11/FD10	25.4	60	54.3	10.5	8.2	E-BAF11/FD10
LEN5254-075-BK7/SF5	25.4	75	70.3	9.5	6.9	N-BK7/SF5
LEN5254-080-BK7/SF5	25.4	80	75.3	10	7.3	N-BK7/N-SF5
LEN5254-100-BK7/SF5	25.4	100	97.1	6.5	4.7	N-BK7/SF5
LEN5254-125-BK7/SF5	25.4	125	122	6.8	5	N-BK7/N-SF5
LEN5254-150-BK7/SF5	25.4	150	146.1	7.9	6.6	N-BK7/SF5
LEN5254-200-SSK5/LAFN7	25.4	200	194	6.5	5.7	N-SSK5/LAFN7
LEN5254-250-BK7/SF2	25.4	250	246.7	6	5.2	N-BK7/SF2
LEN5254-300-BK7/SF2	25.4	300	297	6	5.4	N-BK7/SF2
LEN5254-400-BK7/SF2	25.4	400	396	6	5.5	N-BK7/SF2
LEN5254-500-BK7/SF2	25.4	500	499.9	6	5.6	N-BK7/SF2
LEN5265-99R9-BaK6/ZF2	26.5	99.9		6.8	4.93	H-BaK6/H-ZF2
LEN5300-050-BAF10/SF6HT	30	50	44.3	10.5	4.28	N-BAF10/N-SF6HT
LEN5300-080-BAF10/SF6HT	30	80	74.3	10.5	4	N-BAF10/N-SF6HT
LEN5300-100-BAF10/SF6HT	30	100	96.4	7	5.6	N-BAF10/N-SF6HT
LEN5315-160-Bak2/SF15	31.5	160	156.5	7.34	5.56	Bak2/SF15
LEN5315-200-BK7/SF12	31.5	200	196.9	6.11	4.63	BK7/SF12
LEN5350-200-BK7/F2	35	200	200.6	10.6	8.81	BK7/F2
LEN5400-063-ZBAF52/ZF7LA	40	63	53.6	16.5	10.51	H-ZBAF52/H-ZF7LA
LEN5400-100-Bak2/SF15	40	100	94.1	11.84	7.19	Bak2/SF15
LEN5400-160-Bak2/SF15	40	160	155.5	9.24	6.37	Bak2/SF15
LEN5400-250-BK7/SF12	40	250	246.1	7.64	5.73	BK7/SF12
LEN5400-400-BK7/SF12	40	400	397.1	5.92	4.73	BK7/SF12
LEN5400-500-BK7/SF5	40	500	495.2	10	9.04	BK7/N-SF5
LEN5400-750-BK7/SF5	40	750	744.1	8	7.36	BK7/N-SF5
LEN5500-100-Bak2/SF15	50	100	91.9	15.89	8.57	Bak2/SF15
LEN5500-160-Bak2/SF15	50	160	151.9	12.37	7.86	Bak2/SF15
LEN5500-250-Bak2/SF15	50	250	245.2	9.56	6.7	Bak2/SF15
LEN5500-400-BK7/F2	50	400	395.5	8.56	6.7	BK7/F2
LEN5500-630-BK7/SF12	50	630	626.4	6.3	6.12	BK7/SF12
LEN5508-075-BAF11/SF11	50.8	75	61.7	23	14.9	E-BAF11/N-SF11
LEN5508-080-BAF10/SF6HT	50.8	80	69.5	18	10.3	N-BAF10/N-SF6HT
LEN5508-100-BAF10/SF10	50.8	100	89	20	14.1	N-BAF10/SF10
LEN5508-150-BK7/SF5	50.8	150	140.4	14	9.4	N-BK7/SF5
LEN5508-180-BK7/SF5	50.8	180	172.7	14	9.4	N-BK7/N-SF5
LEN5508-200-BK7/SF2	50.8	200	193.7	10.5	6.7	N-BK7/SF2
LEN5508-250-BK7/SF2	50.8	250	244.6	9.5	6.4	N-BK7/SF2
LEN5508-300-BK7/SF2	50.8	300	295.4	8	5.4	N-BK7/SF2
LEN5508-400-BK7/SF2	50.8	400	396.1	7	5.1	N-BK7/SF2
LEN5508-500-BK7/SF2	50.8	500	495.8	7	5.5	N-BK7/SF2
LEN5508-750-BK7/SF2	50.8	750	746.5	6.5	5.5	N-BK7/SF2
LEN5508-1000-BK7/SF2	50.8	1000	994.6	6	5.2	N-BK7/SF2
LEN5600-145-SK2/SF10	60	145	135.5	18.6	12.36	SK2/SF10
LEN5600-200-Bak2/SF15	60	200	192.2	15.47	10.28	Bak2/SF15
LEN5600-300-BK7/SF2	60	300	295.3	8.5	4.93	BK7/SF2
LEN5630-150-Bak2/SF15	63	150	141.2	17.39	9.7	Bak2/SF15



Achromatic Positive Lens : 650nm - 1050nm

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN5050-075-BAF10/SF6HT	5	7.5	4.8	4.6	3.8	N-BAF10/N-SF6HT
LEN5050-010-LAK22/SF6HT	5	10	8	3.8	3.2	N-LAK22/N-SF6HT
LEN5050-015-LAK22/SF6HT	5	15	13	4	3.6	N-LAK22/N-SF6HT
LEN5060-010-LAK22/SF6HT	6	10	8.1	4	3.1	N-LAK22/N-SF6HT
LEN5063-12R7-BAK4/SF5	6.35	12.7	10.7	3.9	3.1	N-LAK22/N-SF6HT
LEN5063-015-BK7/SF2	6.35	15	13.1	3.9	3.2	N-LAK22/N-SF6HT
LEN5080-010-LAK10/SF6HT	8	10	7	5.8	4.4	N-LAK22/N-SF6HT
LEN5080-016-Bak2/SF15	8	16	14	4	3	N-LAK22/N-SF6HT
LEN5080-020-BK7/SF2	8	20	18.2	3.6	2.8	N-LAK22/N-SF6HT
LEN5127-019-BAF10/SF6HT	12.7	19	15.5	6	3.9	N-BAF10/N-SF6HT
LEN5127-019-ZBaF52/ZF7LA	12.7	19		6	3.96	H-ZBaF52/H-ZF7LA
LEN5127-025-LAK22/SFEHT	12.7	25	21.1	7	5.4	N-LAK22/N-SFEHT
LEN5127-030-LAK22/SF6HT	12.7	30	27.3	5	3.7	N-LAK22/N-SF6HT
LEN5127-050-BAF10/SF6HT	12.7	50	46.2	5	4.2	N-BAF10/N-SF6HT
LEN5127-075-BAF10/SF6HT	12.7	75	72	4	3.5	N-BAF10/N-SF6HT
LEN5254-030-BAF10/SF6HT	25.4	30	23	13.5	8.2	N-BAF10/N-SF6HT
LEN5254-035-BAF10/SF6HT	25.4	35	28.4	12	7.5	N-BAF10/N-SF6HT
LEN5254-040-BAF10/SF6HT	25.4	40	32.8	12.5	8.6	N-BAF10/N-SF6HT
LEN5254-040-LAK22/SF6HT	25.4	40	32.8	11.8	7.7	N-LAK22/N-SF6HT
LEN5254-045-LAK22/SF6HT	25.4	45	39.6	9.4	5.9	N-LAK22/N-SF6HT
LEN5254-045-LAK22/SF6HT	25.4	45	36.7	11.4	7.7	N-LAK22/N-SF6HT
LEN5254-050-LAK22/SF6HT	25.4	50	45	9.3	6.2	N-LAK22/N-SF6HT
LEN5254-050-LAK22/SF6HT	25.4	50	41.2	10.8	7.4	N-LAK22/N-SF6HT
LEN5254-060-LAK22/SF6HT	25.4	60	55.8	7.7	5.1	N-LAK22/N-SF6HT
LEN5254-060-LAK22/SF6HT	25.4	60	50.5	10.1	7.2	N-LAK22/N-SF6HT
LEN5254-075-BAF10/SF6HT	25.4	75	69.9	6.6	4.5	N-BAF10/N-SF6HT
LEN5254-075-BAF10/SF6HT	25.4	75	65	9.4	7.1	N-BAF10/N-SF6HT
LEN5254-080-BAF10/SF6HT	25.4	80	73.5	8.6	6.4	N-BAF10/N-SF6HT
LEN5254-100-LAK22/SF6HT	25.4	100	97.1	5.5	4	N-LAK22/N-SF6HT
LEN5254-100-BAF10/SF6HT	25.4	100	90.4	8.3	6.6	N-BAF10/N-SF6HT
LEN5254-125-LAK22/SF6HT	25.4	125	115.3	8	6.5	N-LAK22/N-SF6HT
LEN5254-125-BK7/SF8	25.4	125	115.4	12	10	N-BK7/N-SF8
LEN5254-150-BAF10/SF6HT	25.4	150	140.8	7.5	6.3	N-BAF10/N-SF6HT
LEN5254-150-LAK22/SF6HT	25.4	150	144.6	7.5	6.5	N-LAK22/N-SF6HT
LEN5254-200-LAK22/SF6HT	25.4	200	193.1	7	6.1	N-LAK22/N-SF6HT
LEN5254-200-LAK22/SF10	25.4	200	194.8	8	7.3	N-LAK22/SF10
LEN5254-250-SF2/SF6HT	25.4	250	235.2	7	6	SF2/N-SF6HT
LEN5254-250-SF5/SF6HT	25.4	250	237.5	5.5	47	SF5/N-SF6HT
LEN5254-300-SF2/SF6HT	25.4	300	285.8	7	6.2	SF2/N-SF6HT
LEN5254-300-SF5/SF6HT	25.4	300	290	6	5.3	SF5/N-SF6HT
LEN5254-400-SF2/SF6HT	25.4	400	386.7	6.7	6.1	SF2/N-SF6HT
LEN5254-400-SF5/SF6HT	25.4	400	391.1	5.3	4.8	SF5/N-SF6HT
LEN5254-500-SF2/SF6HT	25.4	500	486.7	5.5	5	SF2/N-SF6HT
LEN5254-500-SF10/SF6HT	25.4	500	480.8	6	5.6	SF10/N-SF6HT
LEN5300-050-BAF10/SF6HT	30	50	42.9	11.5	7.2	N-BAF10/N-SF6HT
LEN5300-060-BAF10/SF6HT	30	80	75.3	8.5	4	N-BAF10/N-SF6HT
LEN5300-100-BAF10/SF6HT	30	100	96	8	5.9	N-BAF10/N-SF6HT
LEN5508-075-BAF11/SF11	50.8	75	65.7	17	9.2	E-BAF11/N-SF11
LEN5508-080-BAF10/SF6HT	50.8	80	69.5	18	10.3	N-BAF10/N-SF6HT
LEN5508-100-BAF10/SF10	50.8	100	91.5	15	8	N-BAF10/SF10
LEN5508-150-BK7/SF5	50.8	150	145.3	14	9.3	N-BK7/SF5
LEN5508-200-BK7/SF2	50.8	200	193.2	13.2	10.1	N-BK7/SF2
LEN5508-250-BK7/SF2	50.8	250	243.2	9.2	6.8	N-BK7/SF2
LEN5508-300-BK7/SF2	50.8	300	295.1	9.2	7.2	N-BK7/SF2
LEN5508-400-BK7/SF2	50.8	400	393.6	7.1	5.6	N-BK7/SF2
LEN5508-500-BK7/SF2	50.8	500	497	7.1	5.9	N-BK7/SF2
LEN5508-750-BK7/SF2	50.8	750	744.8	6.7	6	N-BK7/SF2
LEN5508-1000-BK7/SF2	50.8	1000	993.6	7	6.4	N-BK7/SF2



Achromatic Positive Lens : 1000nm - 1650nm

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN5050-7R5-LAK22/SF6HT	5	7.5	5.2	4	3.1	N-LAK22/N-SF6HT
LEN5050-010-LAK22/SF6HT	5	10	6.9	4	3.3	N-LAK22/N-SF6HT
LEN5050-015-BAF10/SF6HT	5	15	11.6	3.3	2.9	N-BAF10/N-SF6HT
LEN5060-010-LAK22/N-SF6HT	6	10	8.5	4.8	3.9	N-LAK22/N-SF6HT
LEN5063-12R7-BAK4/SF5	6.35	12.7	11.4	4.1	3.3	N-LAK22/N-SF6HT
LEN5063-015-BK7/SF2	6.35	15	14.4	3.6	2.9	N-LAK22/N-SF6HT
LEN5080-010-LAK10/SF6HT	8	10	7	5.8	4.4	N-LAK10/N-SF6HT
LEN5080-016-LAK22/SF6HT	8	16	12.5	4.8	3.8	N-LAK22/N-SF6HT
LEN5080-020-LAK22/SF6HT	8	20	15.7	4.6	3.7	N-LAK22/N-SF6HT
LEN5127-019-LAK22/SF6HT	12.7	19	15.5	6.5	4.3	N-LAK22/N-SF6HT
LEN5127-025-LAK22/SF6HT	12.7	25	20.3	6.2	4.5	N-LAK22/N-SF6HT
LEN5127-030-LAK22/SF6HT	12.7	30	24.5	6.2	4.8	N-LAK22/N-SF6HT
LEN5127-050-BAF10/SF6HT	12.7	50	43.5	5.5	4.6	N-BAF10/N-SF6HT
LEN5127-075-BAF10/SF6HT	12.7	75	69.8	4.5	3.6	N-BAF10/N-SF6HT
LEN5254-030-BAF10/SF6HT	25.4	30	22.2	14.8	8.8	N-BAF10/N-SF6HT
LEN5254-035-BAF10/SF6EHT	25.4	35	27.4	13.3	8.7	N-BAF10/N-SF6EHT



Achromatic Negative Lens

400 – 700nm

Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN5125-M025-BK7/F2	12.5	-25.0	-27.5	5.7	7.4	BK7/F2
LEN5125-M040-BK7/F2	12.5	-40.0	-42.5	5.3	6.5	BK7/F2
LEN5127-M020-BAF10/SF6HT	12.7	-20.0	-22.3	4.5	6.3	N-BAF10/N-SF6HT
LEN5127-M025-BAF10/SF6HT	12.7	-25.0	-27.0	4.0	5.4	N-BAF10/N-SF6HT
LEN5127-M030-BAK4/SF5	12.7	-30.0	-32.2	3.8	5.2	N-BAK4/SF5
LEN5127-M060-BAK4/SF5	12.7	-50.0	-52.3	3.7	4.6	N-BAK4/SF5
LEN5250-M030-BAF10/SF10	25.0	-30.0	-36.1	12.0	16.5	N-BAF10/N-SF10
LEN5250-M050-BK7/F2	25.0	-50.0	-53.3	7.2	10.8	BK7/F2
LEN5250-M100-BK7/F2	25.0	-100.0	-102.6	6.6	8.4	BK7/F2
LEN5250-M150-BK7/SF5	25.0	-150.0	-152.6	6.6	7.7	BK7/N-SF5
LEN5254-M040-BAF10/SF11	25.4	-40.0	-43.6	7.0	10.6	N-BAF10/N-SF11
LEN5254-M060-BAF10/SF6HT	25.4	-50.0	-53.2	6.5	9.4	N-BAF10/N-SF6HT
LEN5254-M075-BAK4/SF5	25.4	-75.0	-78.8	6.3	8.6	N-BAK4/SF5
LEN5254-M100-BAK4/SF5	25.4	-100.0	-103.6	6.0	7.7	N-BAK4/SF5
LEN5400-M090-BK7/SF5	40.0	-90.0	-92.8	8.0	13.4	BK7/N-SF5
LEN5400-M100-BK7/SF5	40.0	-100.0	-104.3	13.5	15.3	BK7/N-SF5
LEN5400-M150-BK7/SF2	40.0	-150.0	-151.5	6.8	9.9	BK7/N-SF2
LEN5400-M200-BK7/SF2	40.0	-200.0	-201.1	6.0	8.3	BK7/N-SF2

650 – 1050nm

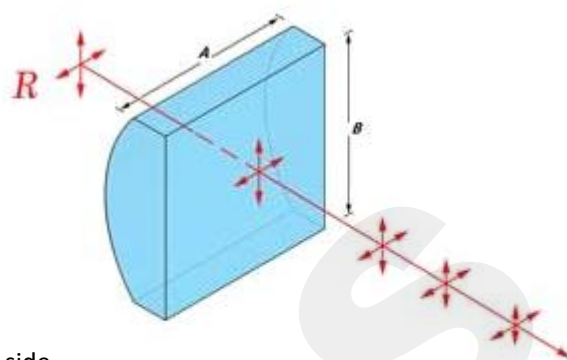
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)	Material
LEN5127-M020-BAF10/SF6HT	12.7	-20.0	-22.5	4.5	6.4	N-BAF10/N-SF6HT
LEN5127-M025-BAF10/SF6HT	12.7	-25.0	-27.7	4.3	5.9	N-BAF10/N-SF6HT
LEN5127-M030-LA22/SF6HT	12.7	-30.0	-32.0	4.0	5.3	N-LA22/N-SF6HT
LEN5127-M050-BAF10/SF6HT	12.7	-50.0	-52.5	3.5	4.3	N-BAF10/N-SF6HT
LEN5254-M040-BAF10/SF6HT	25.4	-40.0	-43.4	6.0	9.8	N-BAF10/N-SF6HT
LEN5254-M050-BAF10/SF6HT	25.4	-50.0	-53.8	6.0	9.1	N-BAF10/N-SF6HT
LEN5254-M075-BAF10/SF6HT	25.4	-75.0	-78.9	5.8	7.9	N-BAF10/N-SF6HT
LEN5254-M100-BAF10/SF6HT	25.4	-100.0	-103.9	5.4	6.9	N-BAF10/N-SF6HT



K9 Plano Convex Cylindrical lens

Specifications

- **Materials:** H-K9L or other optical glass,
fused silica, CaF2 and ZnSe
- **Diameter tolerance:** +0/-0.01 mm
- **Thickness Tolerance:** +/-0.2mm
- **Focal length tolerance:** +/- 1%
- **Surface quality:** 60/40
- **Clear aperture:** >90%
- **Surface figure:** $\lambda/2$ at 633nm on Plano side
- **Coating:** Customer Specified



Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN8-50x50-020-24	5.0x5.0	20	18.5	10.33	2.31	2
LEN8-60x40-040-36	6.0x4.0	4	1.7	2.07	3.6	2
LEN8-60x40-5R8-25	6.0x4.0	5.8	4	3	2.5	2
LEN8-60x40-5R8-28	6.0x4.0	5.8	4	3	2.8	2
LEN8-60x40-5R8-26	6.0x4.0	5.8	4	3	2.6	2
LEN8-60x60-6R4-40	6.0x6.0	6.4	3.7	3.3	4	2
LEN8-80x40-040-36	8.0x4.0	4	1.7	2.07	3.6	2
LEN8-80x40-5R8-25	8.0x4.0	5.8	4	3	2.5	2
LEN8-80x60-6R4-40	8.0x6.0	6.4	3.7	3.3	4	2
LEN8-90x70-7R7-41	9.0x7.0	7.7	5	4.1	4.1	2
LEN8-90x70-7R7-410	9.0x7.0	7.7	5	41	4.1	2
LEN8-100x100-12R7-44	10.0x10.0	12.7	9.9	6.56	4.31	2
LEN8-100x100-020-33	10.0x10.0	20	17.8	10.33	3.29	2
LEN8-100x100-025-31	10.0x10.0	25	22.9	12.92	3.01	2
LEN8-100x100-12R7-4310	10.0x10.0	12.7	9.5	6.56	4.31	2
LEN8-120x100-010-59	12.0x10.0	10	6.1	5.17	5.9	2
LEN8-120x100-12R7-44	12.0x10.0	12.7	9.9	6.56	4.31	2
LEN8-120x100-015-38	12.0x10.0	15	12.5	7.76	3.8	2
LEN8-120x100-020-33	12.0x10.0	20	17.8	10.34	3.3	2
LEN8-120x100-025-30	12.0x10.0	25	22.9	12.93	3	2
LEN8-120x100-040-26	12.0x10.0	40	38.3	20.68	2.6	2
LEN8-120x100-12R7-4310	12.0x10.0	12.7	9.9	6.56	4.31	2
LEN8-120x100-015-36	12.0x10.0	15	12.5	7.76	3.6	2
LEN8-120x60-6R4-40	12.0x6.0	6.4	3.7	3.3	4	2
LEN8-120x60-6R4-400	12.0x6.0	6.4	3.7	3.3	40	2
LEN8125-12R7-66	12.5	12.7	8.3	6.56	6.57	2
LEN8125-025-37	12.5	25	22.6	12.93	3.61	2
LEN8125-050-28	12.5	50	48.1	25.85	2.77	2
LEN8125-075-25	12.5	75	73.3	38.78	2.5	2
LEN8125-100-24	12.5	100	98.4	51.68	2.38	2
LEN8-125-075-25	12.5	75	73.3	38.78	2.5	2
LEN8-125-100-24	12.5	100	98.4	51.68	2.38	2
LEN8-170x150-020-52	17.0x15.0	20	16.6	10.34	5.2	2
LEN8-170x150-020-50	17.0x15.0	20	16.6	10.34	5.2	2
LEN8-200x100-010-59	20.0x10.0	10	6.1	5.17	5.9	2
LEN8-200x100-12R7-44	20.0x10.0	12.7	9.9	6.56	4.31	2
LEN8-200x100-015-36	20.0x10.0	15	12.5	7.76	3.6	2
LEN8-200x100-020-33	20.0x10.0	20	17.8	10.34	3.29	2
LEN8-200x100-025-31	20.0x10.0	25	23	12.93	3.01	2
LEN8-200x100-040-26	20.0x10.0	40	36.3	20.68	2.6	2
LEN8-200x100-015-38	20.0x10.0	15	12.5	7.76	3.8	2



K9 Plano Convex Cylindrical lens

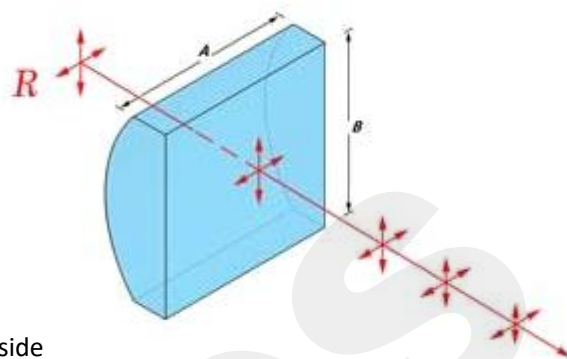
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN8-200x100-015-38	20.0x10.0	15	12.5	7.76	3.8	2
LEN8-200x200-050-41	20.0x20.0	50	47.4	25.65	4.02	2
LEN8-200x200-075-34	20.0x20.0	75	72.8	36.78	3.31	2
LEN8-200x200-100-40	20.0x20.0	100	97.4	51.68	3.98	3
LEN8-200x200-150-37	20.0x20.0	150	147.6	77.55	3.65	3
LEN8-200x200-200-35	20.0x20.0	200	197.7	103.4	3.49	3
LEN8-200x200-250-34	20.0x20.0	250	247.8	129.25	3.39	3
LEN8-200x200-300-34	20.0x20.0	300	297.8	155.1	3.32	3
LEN8-200x200-500-32	20.0x20.0	500	497.9	258.5	3.19	3
LEN8-200x200-1000-31	20.0x20.0	1000	998.2	516.8	3.1	3
LEN8025-025-117	25	25	17.3	12.93	11.62	2
LEN8025-050-53	25	50	46.5	25.85	5.22	2
LEN8025-075-41	25	75	72.3	38.78	4.07	2
LEN8025-100-36	25	100	97.6	51.68	3.53	2
LEN8025-125-33	25	125	122.8	64.6	3.22	2
LEN8025-150-31	25	150	148	77.55	3.01	2
LEN8250-025-117	25	25	17.3	12.93	11.62	2
LEN8250-050-53	25	50	46.5	25.85	5.22	2
LEN8250-075-41	25	75	72.3	38.78	4.07	2
LEN8250-100-36	25	100	97.6	51.68	3.53	2
LEN8250-125-33	25	125	122.8	64.6	3.22	2
LEN8250-150-31	25	150	148	77.55	3.01	2
LEN8-400x200-025-67	40.0x20.0	25	20.4	12.93	6.7	2
LEN8-400x200-030-57	40.0x20.0	30	26.3	15.51	5.7	2
LEN8-400x200-040-46	40.0x20.0	40	37	20.68	4.6	2
LEN8-400x200-050-41	40.0x20.0	50	47.4	25.85	4.02	2
LEN8-400x200-075-34	40.0x20.0	75	72.8	38.78	3.31	2
LEN8-400x200-100-40	40.0x20.0	100	97.4	51.68	3.98	3
LEN8-400x200-150-37	40.0x20.0	150	147.6	77.55	3.65	3
LEN8-400x200-200-35	40.0x20.0	200	197.7	103.4	3.49	3
LEN8-400x200-250-31	40.0x20.0	250	247.8	129.25	3.39	3
LEN8-400x200-300-34	40.0x20.0	300	297.6	155.1	3.32	3
LEN8-400x200-500-32	40.0x20.0	500	497.9	258.5	3.19	3
LEN8-400x200-1000-31	40.0x20.0	1000	996.2	516.8	3.1	3
LEN8-400x200-040-460	40.0x20.0	40	37	20.68	4.6	2
LEN8-400x200-250-34	40.0x20.0	250	247.8	129.25	3.39	3
LEN8-530x530-075-115	53.0x50.6	75	67.4	38.78	11.5	2
LEN8-530x530-50R8-216	53.0x50.8	50.8	36.7	26.26	21.6	2
LEN8-530x530-60R6-216	53.0x50.8	50.8	36.7	26.26	21.6	2
LEN8-600x300-050-68	60.0x30.0	50	45.5	25.85	6.8	2
LEN8-600x300-100-52	60.0x30.0	100	96.6	51.7	5.2	3
LEN8-600x300-150-45	60.0x30.0	150	147.1	77.55	4.5	3
LEN8-600x300-200-41	60.0x30.0	200	197.3	103.4	4.1	3
LEN8-600x300-300-37	60.0x30.0	300	297.7	155.1	3.7	3
LEN8-600x300-400-35	60.0x30.0	400	397.7	206.8	3.5	3
LEN8-600x300-500-34	60.0x30.0	500	497.7	258.5	3.4	3
LEN8-600x300-1000-32	60.0x30.0	1000	997.9	516.6	3.2	3
LEN8-600x300-150-450	60.0x30.0	150	147.1	77.55	4.5	3



SiO2 Plano Convex Cylindrical Lens

Specifications

- Materials:** H-K9L or other optical glass, fused silica, CaF2 and ZnSe
- Diameter tolerance:** +0/-0.01 mm
- Thickness Tolerance:** +/-0.2mm
- Focal length tolerance:** +/- 1%
- Surface quality:** 60/40
- Clear aperture:** >90%
- Surface figure:** $\lambda/2$ at 633nm on Plano side
- Coating:** Customer Specified



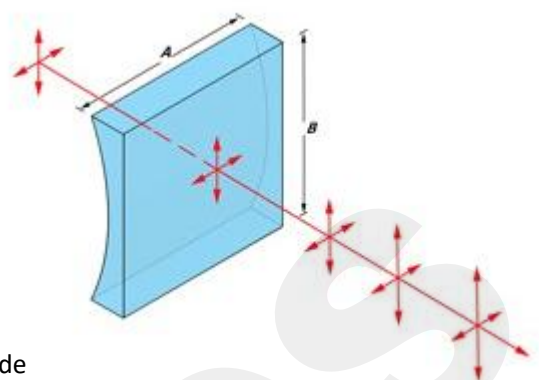
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN8-100x100-12R7-49FS	10.0x10.0	12.7	9.3	5.82	4.84	2
LEN8-100x100-020-35FS	10.0x10.0	20	17.5	9.16	3.49	2
LEN8-100x100-025-32FS	10.0x10.0	25	22.8	11.45	3.15	2
LEN8-100x100-040-27FS	10.0x10.0	40	38.1	16.32	2.7	2
LEN8-100x100-050-26FS	10.0x10.0	50	48.2	22.92	2.55	2
LEN8-100x100-075-24FS	10.0x10.0	75	73.3	34.35	2.37	2
LEN8-100x100-100-23FS	10.0x10.0	100	98.4	45.85	2.27	2
LEN8-100x100-150-22FS	10.0x10.0	150	148.5	68.78	2.18	2
LEN8-100x100-200-22FS	10.0x10.0	200	198.5	91.7	2.14	2
LEN8-100x100-250-22FS	10.0x10.0	250	248.5	114.62	2.11	2
LEN8-100x100-300-21FS	10.0x10.0	300	298.5	137.55	2.09	2
LEN8125-025-39FS	12.5	25	22.3	11.46	3.85	2
LEN8125-050-29FS	12.5	50	48	22.93	2.87	2
LEN8125-075-26FS	12.5	75	73.2	34.38	2.57	2
LEN8125-100-25FS	12.5	100	98.3	45.85	2.43	2
LEN8-200x100-127-49FS	20.0x10.0	127	9.3	5.82	4.84	2
LEN8-200x100-020-35FS	20.0x10.0	20	17.5	9.16	3.49	2
LEN8-200x100-025-32FS	20.0x10.0	25	22.8	11.45	3.15	2
LEN8-200x100-040-27FS	20.0x10.0	40	38.1	18.32	2.7	2
LEN8-200x100-050-26FS	20.0x10.0	50	48.2	22.92	2.55	2
LEN8-200x100-075-24FS	20.0x10.0	75	73.3	34.35	2.37	2
LEN8-200x100-100-23FS	20.0x10.0	100	98.4	45.85	2.27	2
LEN8-200x100-150-22FS	20.0x10.0	150	148.5	68.78	2.18	2
LEN8-200x100-200-22FS	20.0x10.0	200	198.5	91.7	2.14	2
LEN8-200x100-250-22FS	20.0x10.0	250	248.5	114.62	2.11	2
LEN8-200x100-300-21FS	20.0x10.0	300	298.5	137.55	2.09	2
LEN8250-050-58FS	25	50	46.1	22.93	5.71	2
LEN8250-075-44FS	25	75	72	34.39	4.35	2
LEN8250-100-38FS	25	100	97.4	45.85	3.74	2
LEN8250-150-32FS	25	150	147.8	68.78	3.15	2
LEN8-300x200-025-79FS	30.0x20.0	25	19.5	11.45	7.87	2
LEN8-300x200-050-43FS	30.0x20.0	50	47	22.92	4.3	2
LEN8-300x200-075-35FS	30.0x20.0	75	72.5	34.35	3.49	2
LEN8-300x200-100-31FS	30.0x20.0	100	97.8	45.85	3.1	2



K9 Plano Concave Cylindrical Lens

Specifications

- **Materials** : H-K9L or other optical glass,
fused silica, CaF2 and ZnSe
- **Diameter tolerance** : +0/-0.01 mm
- **Thickness Tolerance**: +/-0.2mm
- **Focal length tolerance** : +/- 1%
- **Surface quality**: 60/40
- **Clear aperture** : >90%
- **Surface figure**: $\lambda/2$ at 633nm on Plano side
- **Coating**: Customer Specified



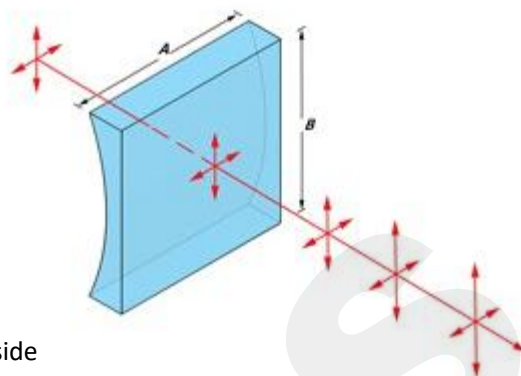
Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN8-80x40-M004-20	8.0x4.0	-4	-5.3	-2.07	2	3.54
LEN8-80x40-M5R5-20	8.0x4.0	-5.8	-7.1	-3	2	2.76
LEN8-80x40-M5R8-20	8.0x4.0	-5.8	-7.1	-3	2	2.76
LEN8-80x60-M6R4-20	8.0x6.0	-6.4	-7.7	-3.3	2	3.93
LEN8-100x100-M12R7-20	10.0x10.0	-12.7	-14	-6.56	2	4.31
LEN8-100x100-M025-20	10.0x10.0	-25	-26.2	-12.93	2	3.01
LEN8-120x60-M6R4-20	12.0x6.0	-6.4	-7.7	-3.3	2	3.93
LEN8-120x100-M12R7-20	12.0x10.0	-12.7	-14	-6.56	2	4.31
LEN8-120x100-M015-20	12.0x10.0	-15	-16.3	-7.76	2	3.83
LEN8-120x100-M025-20	12.0x10.0	-25	-26.2	-12.93	2	3.01
LEN8-120x100-M040-20	12.0x10.0	-40	-41.3	-20.68	2	2.61
LEN8-200x100-M12R7-20	20.0x10.0	-12.7	-14	-6.56	2	4.31
LEN8-200x100-M025-20	20.0x10.0	-25	-26.3	-12.93	2	3.01
LEN8-200x200-M050-20	20.0x20.0	-50	-51.3	-25.85	2	4.01
LEN8-200x200-M075-30	20.0x20.0	-75	-76.3	-38.78	3	4.31
LEN8-200x200-M100-30	20.0x20.0	-100	-101.3	-51.64	3	3.98
LEN8-200x200-M150-30	20.0x20.0	-150	-152	-77.55	3	3.65
LEN8-200x200-M200-30	20.0x20.0	-200	-202	-103.4	3	3.48
LEN8-200x200-M250-30	20.0x20.0	-250	-252	-129.25	3	3.39
LEN8-200x200-M300-30	20.0x20.0	-300	-301.7	-155.1	3	3.32
LEN8-200x200-M600-30	20.0x20.0	-600	-502	-258.5	3	3.19
LEN8-200x200-M1000-30	20.0x20.0	-1000	-1002	-516.8	3	3.1
LEN8-210x190-M019-20	21.0x19.0	-19	-20.3	-9.8	2	9.39
LEN8-250x160-M25R2-15	25.0x16.0	-25.2	-26.2	-13	1.5	4.25
LEN8-400x200-M050-20	40.0x20.0	-50	-52	-25.85	2	4.01
LEN8-400x200-M075-30	40.0x20.0	-75	-77	-38.78	3	4.31
LEN8-400x200-M100-30	40.0x20.0	-100	-101.3	-51.68	3	3.98
LEN8-400x200-M150-30	40.0x20.0	-150	-152	-77.55	3	3.65
LEN8-400x200-M200-30	40.0x20.0	-200	-202	-103.4	3	3.48
LEN8-400x200-M250-30	40.0x20.0	-250	-252	-129.25	3	3.39
LEN8-400x200-M500-30	40.0x20.0	-500	-502	-258.5	3	3.19
LEN8-400x200-M1000-30	40.0x20.0	-1000	-1002	-516.8	3	3.1
LEN8-530x50R8-M50R8-20	53.0x50.8	-50.8	-52.3	-26.4	2	19.92
LEN8-530x50R8-M075-20	53.0x50.8	-75	-76.3	-38.8	2	11.13



SiO2 Plano Concave Cylindrical Lens

Specifications

- **Materials** : H-K9L or other optical glass,
fused silica, CaF2 and ZnSe
- **Diameter tolerance** : +0/-0.01 mm
- **Thickness Tolerance**: +/-0.2mm
- **Focal length tolerance** : +/- 1%
- **Surface quality**: 60/40
- **Clear aperture** : >90%
- **Surface figure**: $\lambda/2$ at 633nm on Plano side
- **Coating**: Customer Specified



Part Number	Diameter (mm)	Focal Length (f mm)	Back Focal Length (fb mm)	R1 (mm)	Center Thickness (Tc mm)	Edge Thickness (Te mm)
LEN8-100x100-M12R7-20FS	10.0x10.0	-12.7	-14.07	5.82	2.0	4.84
LEN8-100x100-M020-20FS	10.0x10.0	-20	-21.35	9.16	2.0	3.49
LEN8-100x100-M025-20FS	10.0x10.0	-25	-26.35	11.45	2.0	3.15
LEN8-100x100-M040-20FS	10.0x10.0	-40	-41.33	18.32	2.0	2.7
LEN8-100x100-M060-20FS	10.0x10.0	-50	-51.36	22.92	2.0	2.55
LEN8-100x100-M075-20FS	10.0x10.0	-75	-76.3	34.35	2.0	2.37
LEN8-100x100-M100-20FS	10.0x10.0	-100	-101.38	45.35	2.0	2.27
LEN8-100x100-M150-20FS	10.0x10.0	-150	-151.39	68.78	2.0	2.18
LEN8-100x100-M200-20FS	10.0x10.0	-200	-201.39	91.7	2.0	2.14
LEN8-100x100-M250-20FS	10.0x10.0	-250	-251.38	114.62	2.0	2.11
LEN8-100x100-M300-20FS	10.0x10.0	-300	-301.4	137.55	2.0	2.09
LEN8-200x100-M12R7-20FS	20.0x10.0	-12.7	-14.07	5.82	2.0	4.84
LEN8-200x100-M020-20FS	20.0x10.0	-20	-21.35	9.16	2.0	3.49
LEN8-200x100-M025-20FS	20.0x10.0	-25	-26.35	11.45	2.0	3.15
LEN8-200x100-M040-20FS	20.0x10.0	-40	-41.33	18.32	2.0	2.7
LEN8-200x100-M050-20FS	20.0x10.0	-50	-51.36	22.92	2.0	2.55
LEN8-200x100-M075-20FS	20.0x10.0	-75	-76.3	34.35	2.0	2.37
LEN8-200x100-M100-20FS	20.0x10.0	-100	-101.38	45.85	2.0	2.27
LEN8-200x100-M150-20FS	20.0x10.0	-150	-151.39	68.78	2.0	2.18
LEN8-200x100-M200-20FS	20.0x10.0	-200	-201.39	91.7	2.0	2.14
LEN8-200x100-M250-20FS	20.0x10.0	-250	-251.38	114.62	2.0	2.11
LEN8-200x100-M300-20FS	20.0x10.0	-300	-301.4	137.55	2.0	2.09
LEN8-300x200-M025-20FS	30.0x20.0	-25	-26.35	11.45	2.0	7.87
LEN8-300x200-M050-20FS	30.0x20.0	-50	-51.36	22.92	2.0	4.3
LEN8-300x200-M075-20FS	30.0x20.0	-75	-76.3	34.35	2.0	3.49
LEN8-300x200-M100-20FS	30.0x20.0	-100	-101.38	45.85	2.0	3.1



Precise Glass Aspheric Lens for LASER, IMAGING

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Part no	Diameter (mm)	Focal Length (f mm)	NA	Center thickness (Tc mm)	working distance (mm)	CA (mm)	AR Coating (nm)
LENA019-R91-23	1.97	0.91		2.31		1.77	
LENA020-1R5-08	2	1.5		0.86			1550
LENA020-05-09	2	5		0.99			1550
LENA024-1R1-12	2.4	1.14		1.24			1300
LENA024-1R4-10	2.4	1.45		1			780
LENA025-R91-09	2.5	0.91	0.45	0.88	0.45	0.84	1550
LENA025-1R4-07	2.5	1.4	0.52	0.74	1.06	1.44	518
LENA028-6R1-19	2.79	6.1		1.93			1550
LENA028-05-19	2.8	5	0.2	1.95	4.77	2.6	400-700
LENA030-02-20	3	2	0.5	2	1.09	2	780
LENA030-02-18	3	2		1.87			650
LENA030-02-19	3	2		1.87			650
LENA030-2R4-16	3	2.4		1.65			520
LENA030-03-20	3	3	0.3	2	3.27	2.65	400-700
LENA030-3R7-15	3	3.77	0.33	1.5	2.99	2.5	635
LENA030-3R7-20	3	3.77		2			
LENA030-3R8-15	3	3.8	0.3	1.5	2.8	2.5	400-700
LENA030-3R8-18	3	3.8		1.8			635
LENA030-04-28	3	4		2.89			408
LENA030-04-29	3	4		2.89			408
LENA030-4R5-18	3	4.5	0.3	1.79	3.46	2.7	633
LENA030-4R5-17	3	4.5		1.78			633
LENA030-4R7-19	3	4.7		1.9			633
LENA030-05-15	3	5	0.25	1.53	4.03	2.6	915
LENA030-06-15	3	6	0.22	1.5	5.2	2.4	400-700
LENA030-06-15	3	6	0.22	1.5	5.2	2.7	633/635
LENA030-06-18	3	6		1.8			780
LENA030-6R2-34	3	6.2		3.48			633
LENA030-6R2-35	3	6.2		3.5			633
LENA030-7R1-22	3	7.1		2.2			635
LENA030-08-19	3	8		1.9			530
LENA030-08-30	3	8		3			530
LENA030-12-25	3	12		2.5			520/532
LENA036-6R2-35	3.6	6.2		3.5			



Precise Glass Aspheric Lens for LASER, IMAGING

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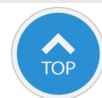
Part no	Diameter (mm)	Focal Length (f mm)	NA	Center thickness (Tc mm)	working distance (mm)	CA (mm)	AR Coating (nm)
LENA038-1R2-13	3.75	1.18	0.4/0.16	1.3	1.1/3.77	1.3	1550
LENA040-2R7-14	4	2.73		1.43			780
LENA040-04-20	4	4	0.4/0.16	2	2.92	3.2	405
LENA040-7R1-22	4	7.1		2.2			635
LENA040-7R2-22	4	7.2	0.21	2.2	5.81	3.5	635
LENA043-4R5-20	4.33	4.5		2			635
LENA045-2R8-22	4.5	2.75	0.64	2.24	1.5	3.6	830
LENA045-2R7-22	4.5	2.75		2.24			830
LENA045-08-20	4.5	8	0.22	2	6.73	3.5	915
LENA047-6R1-34	4.7	6.16		3.48			780
LENA047-6R2-35	4.7	6.2	0.25	3.5	3.96	4.1	633/ 400-700
LENA047-6R2-33	4.7	6.2		3.3			635
LENA047-08-29	4.7	8	0.25	2.9	5.86	4.2	530/400-700
LENA050-04-30	5	4.05		3			445
LENA050-04-31	5	4.05		3.1			445
LENA050-6R2-35	5	6.2	0.27	3.5	3.96	4.2	400-700
LENA050-6R2-33	5	6.2		3.3			635
LENA050-08-25	5	8		2.5			635
LENA050-10-20	5	10	0.28	2	8.43	5	635/400-700
LENA050-10-18	5	10		1.87			520
LENA050-10-26	5	10		2.6			650
LENA050-12-20	5	12		2			5,20,530
LENA054-4R4-34	5.42	4.47		3.45			780
LENA055-03-15	5.5	3		1.5			635
LENA055-8R8-24	5.5	8.8	0.25	2.4	7.3	4.6	635
LENA056-04-28	5.6	4	0.55	2.8	2.76	5.6	400-700
LENA060-3R4-25	6	3.35	0.72	2.5	1.96	5	830
LENA060-04-28	6	4	0.55	2.8	2.76	5.6	400-700
LENA060-4R5-28	6	4.5	0.48	2.8	2.72	5.2	400-700
LENA060-4R5-33	6	4.5		3.3			635
LENA060-08-23	6	8	0.26	2.3	6.55	5.8	400-700
LENA060-08-20	6	8		2			530
LENA060-08-25	6	8		2.5			635
LENA060-10-23	6	10	0.28	2.25	8.43	5.2	400-700



Precise Glass Aspheric Lens for LASER, IMAGING

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Part no	Diameter (mm)	Focal Length (f mm)	NA	Center thickness (Tc mm)	working distance (mm)	CA (mm)	AR Coating (nm)
LENA060-10-20	6	10		2			520/635
LENA060-10-26	6	10		2.6			650
LENA060-12-20	6	12	0.18	2	10.74	5.6	530/400-700
LENA060-12-25	6	12		2.5			520/532
LENA060-15-21	6	15	0.15	2.1	13.64	5.6	400-700
LENA060-15-25	6	15		2.5			635
LENA062-7R5-25	6.17	7.5		2.45			
LENA063-3R1-32	6.325	3.1		3.214			830
LENA063-3R3-28	6.325	3.3		2.89			408
LENA063-3R3-29	6.325	3.3		2.89			408
LENA063-08-19	6.325	8		1.9			530
LENA063-13R8-27	6.325	13.85		2.773			650
LENA063-04-31	6.33	4.05	0.63	3.1	2.8	5.2	445
LENA063-04-30	6.33	4.05		3			445
LENA063-6R4-31	6.35	6.43		3.11			830
LENA064-08-20	6.35	8		2			635
LENA064-09-24	6.35	9.85		2.4			650
LENA063-9R8-24	6.35	9.85		2.456			650
LENA064-10-30	6.35	10	0.27	3	8.26	5.4	786.5
LENA064-10-23	6.35	10	0.28	2.25	8.43	5.6	400-700
LENA065-8R9-24	6.5	8.9	0.3	2.36	7.55	5.3	635
LENA065-8R9-23	6.5	8.95		2.36			635
LENA065-12-24	6.5	12	0.21	2.36	10.55	5	635
LENA065-18R4-21	6.5	18.39		2.18			780
LENA067-8R9-24	6.65	8.9	0.3	2.36	7.55	5.33	635
LENA070-08-23	7	8	0.2	2.3	5.67	6.5	400-700
LENA070-08-25	7	8		2.5			635
LENA070-12-24	7	12	0.21	2.36	10.55	5	635
LENA072-6R2-54	7.2	6.24	0.4	5.36	3.44	5	780
LENA072-6R2-53	7.2	6.24		5.36			780
LENA072-10R9-50	7.2	10.99		5.032			633
LENA075-7R5-23	7.5	7.5	0.2	2.3	7	6.8	635nm
LENA075-20R7-21	7.5	20.7		2.1			780
LENA080-8R4-23	8	8.42		2.3			635



Precise Glass Aspheric Lens for LASER, IMAGING

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Part no	Diameter (mm)	Focal Length (f mm)	NA	Center thickness (Tc mm)	working distance (mm)	CA (mm)	AR Coating (nm)
LENA080-11-26	8	11	0.18	2.6	9.86	7.6	905/ 400-700
LENA080-11R2-27	8	11.2	0.3	2.66	9.7	6.8	635
LENA080-22R5-23	8	22.58		2.35			532
LENA080-22R6-24	8	22.62	0.15	2.35	21.28	7	532
LENA085-15-25	8.5	15		2.5			530
LENA095-24-24	9.5	24.06	0.16	2.35	22.77	7.8	785
LENA095-24-23	9.5	24.06		2.35			785
LENA100-16R7-32	10	16.7	0.27	3.23	14.65	8.8	976
LENA100-19-31	10	19	0.23	3.14	17	8.8	910/915
LENA105-15R3-30	10.5	15.25	0.3	3	13.55	9	639
LENA105-15R2-30	10.5	15.26		3			639
LENA120-24-30	12	24		3			915
LENA120-38-55	12	38		5.5			1064
LENA145-30-75	14.5	30		7.5			850
LENA150-11R2-70	15	11.24		7			587
LENA150-11R3-70	15	11.25	0.62	7	6.84	13.5	587.6
LENA160-18-34	16	18		3.4			915
LENA160-30-30	16	30		3			915
LENA170-35-47	17	35	0.21	4.62	32.08	15	635
LENA200-47-40	20	47	0.15	3.95	14.5	19	400-700
LENA300-11R5-50	30	11.5		5			635



Glass Aspheric Lens for LIGHTING

Part no	Outer Diameter (mm)	Inner Diameter (mm)	Focal Length (f mm)	R	Center thickness (Tc mm)	Edge thickness (mm)
LENA060-05-32	6		5		3.2	
LENA078-05-40	7.8		5		4	
LENA080-11-32	8		11		3.2	
LENA100-07-50	10		7		5	
LENA100-15-35	10		15		3.5	
LENA116-09-58	11.6		9		5.8	
LENA118-10-46	11.8		10		4.6	
LENA120-13-42	12		13		4.2	
LENA125-10-36	12.5	10	10		3.6	1.4
LENA130-08-58	13		8		5.8	
LENA140-20-44	14		20		4.4	
LENA150-09-65	15	13.5	9		6.5	1.5
LENA150-10-60	15	13	10		6	1.5
LENA150-10-72	15		10		7.2	
LENA150-20-38	15		20		3.8	
LENA160-14-51	16	15	14		5.1	1.1
LENA160-17-50	16		17		5	
LENA160-22R8-50	16		22.8		5	1.41
LENA170-09-78	17	16	9		7.8	1.8
LENA180-09-97	18	16	9		9.7	3.5
LENA180-12R8-80	18		12.7	20.630	8	1.65
LENA180-13R5-90	18		13.5		9.07	2.71
LENA180-14R1-80	18		14.1	22	8	1.83
LENA180-14R5-70	18	16	14.5		7	2
LENA180-23-47	18		23		4.7	
LENA193-37-45	19.3		37		4.5	
LENA198-14-75	19.8	18.5	14		7.5	1.5
LENA200-13R5-90	20		13.5		9.07	1
LENA200-15-83	20		15		8.3	
LENA200-28-50	20		28		5	
LENA202-13-81	20.2	17.8	13		8.1	2.8
LENA202-35-45	20.2	17.8	35		4.5	2
LENA210-20R2-75	21		20.1		7.5	1.15
LENA214-20R2-75	21.4		20.1		7.5	1.15
LENA220-17R3-82	22		17.3	19.687	8.16	1.5
LENA220-22-65	22	20	22		6.5	3
LENA230-05-130	23	21	5		13	2
LENA230-15-91	23	22	15		9.1	1.2
LENA230-18-80	23	21	18		8	1.5
LENA230-21R1-91	23		21.1		9.1	1.2



Glass Aspheric Lens for LIGHTING

Part no	Outer Diameter (mm)	Inner Diameter (mm)	Focal Length (f mm)	R	Center thickness (Tc mm)	Edge thickness (mm)
LENA230-24R5-70	23		24.5		7	1.51
LENA239-14-105	23.9	22.5	14		10.5	2.1
LENA250-15-110	25		15		11	
LENA250-20-120	25		20		12	2.76
LENA250-35-68	25		35		6.8	
LENA254-19R8-100	25.4		19.8		10	1.58
LENA254-19R7-100	25.4		19.7		10	1.58
LENA260-11R7-134	26		11.7	-65	13.4	2.66
LENA260-16R9-102	26		16.9	27.110	10.15	1.54
LENA260-16R8-115	26		16.8	27.107	11.5	1.54
LENA260-20R9-150	26		20.9	-46	15	3.05
LENA260-31R4-65	26		31.4		6.47	1.52
LENA270-16R6-127	27		16.6	-38	12.7	2.07
LENA275-16R5-102	27.5	25	16.5		10.2	2.7
LENA280-20-94	28	25	20		9.4	2.2
LENA280-28-73	28	25	28		7.3	2
LENA290-17R3-140	29		17.3	-35	13.95	1
LENA291-31R6-84	29.1		31.6		8.4	1.4
LENA298-23-115	29.8		23		11.5	
LENA298-45-69	29.8		45		6.9	
LENA300-25-98	30	27.5	25		9.8	2.6
LENA300-52R3-75	30		52.3		7.5	3.24
LENA300-90R2-32	30		90.2		3.21	1.47
LENA310-20R6-149	31		20.6	-43.350	14.88	2.38
LENA317-27R8-145	31.67		27.8	-42.842	14.5	2.09
LENA316-27R7-145	31.67		27.7	-43.35	14.5	2.09
LENA320-18R5-130	32		18.4	-60	13	2.23
LENA320-21-78	32	24	21		7.8	2.4
LENA320-23-140	32	29.5	23		14	2
LENA320-145	32	29			14.5	1.5
LENA328-90R7-40	32.8		90.7		4	2.02
LENA328-96R9-40	32.8		96.9		4	2.02
LENA330-53R9-54	33		53.9		5.49	2
LENA335-22-125	33.5	30.5	22		12.5	3.5
LENA340-11-210	34	31.5	11		21	3
LENA340-24R3-165	34		24.3	-55.000	16.5	1.82
LENA340-24R2-165	34		24.2	-60	16.5	1.82
LENA340-30R4-165	34		30.4	-55	16.5	1.82
LENA343-23-118	34.3	30	23		11.8	2.8
LENA348-55-80	34.8		55		8	
LENA350-17-160	35	32	17		16	3



Glass Aspheric Lens for LIGHTING

Part no	Outer Diameter (mm)	Inner Diameter (mm)	Focal Length (f mm)	R	Center thickness (Tc mm)	Edge thickness (mm)
LENA360-24R5-195	36		24.5	54.36	19.5	2.5
LENA360-24R6-195	36		24.6		19.5	2.5
LENA360-27R7-195	36		27.7		19.5	2.5
LENA360-28R2-195	36		28.2		19.5	1.98
LENA360-37R6-112	36		37.6	93.3	11.2	2.16
LENA378-16-195	37.8	35.8	16		19.5	2.5
LENA378-35-100	37.8	32	35		10	2.7
LENA380-49R4-122	38		49.3		12.15	1.75
LENA400-22-160	40	36	22		16	2.5
LENA400-39R1-112	40		39.1		11.2	2.46
LENA400-65-85	40		65		8.5	
LENA410-203-65	41		203.9	80	6.5	1.91
LENA410-204-65	41		204		6.5	1.91
LENA420-34R8-174	42		34.8	134.417	17.35	3
LENA420-34R7-173	42		34.7		17.35	3
LENA420-43-130	42		43		13	2.29
LENA430-28-145	43	36	28		14.5	2.8
LENA435-35-130	43.5	39.5	35		13	2
LENA440-23-190	44	39.5	23		19	3
LENA440-46-115	44		46	134.417	11.5	2.09
LENA440-62R4-85	44		62.3		8.5	2.08
LENA450-49R9-130	45		49.9		13	1.9
LENA450-50-120	45		50	70.324	12	2.18
LENA450-50R1-120	45		50.1		12	2.18
LENA460-24-178	46	39	24		17.8	3
LENA480-24R5-167	48		24.5	70.324	16.72	1.97
LENA480-24R4-167	48		24.4		16.72	1.97
LENA480-31-150	48		31	80	15	2.04
LENA480-31R5-166	48		31.5	73.429	16.64	2
LENA480-35R6-152	48		35.6	73.95	15.2	1.92
LENA480-45R3-130	48		45.3		13	2.51
LENA480-56R3-125	48		56.2		12.47	3.34
LENA500-33-190	50	46	33		19	3
LENA500-35-172	50	46	35		17.2	2.7
LENA500-36R6-167	50		36.6	90	16.73	2.27
LENA500-41R9-165	50		41.8		16.5	2
LENA500-42-155	50	46	42		15.5	2.9
LENA500-48R4-191	50		48.4		19.05	2
LENA500-70-201	50		70	-132.5	20.14	2.98
LENA500-144-80	50		144.8	-523.69	8	3.3



Glass Aspheric Lens for LIGHTING

Part no	Outer Diameter (mm)	Inner Diameter (mm)	Focal Length (f mm)	R	Center thickness (Tc mm)	Edge thickness (mm)
LENA500-146-603	50		146.3		6.03	2
LENA506-30-220	50.6	48	30		22	3.2
LENA510-31-190	51	46	31		19	2.8
LENA510-75-125	51		75		12.5	3
LENA510-225	51	47			22.5	3.5
LENA515-33-185	51.5	45.5	33		18.5	2.6
LENA520-26-248	52	49	26		24.8	2.5
LENA525-36-200	52.5	48	36		20	2.8
LENA530-37-200	53	48	37		20	3.5
LENA530-54R7-142	53		54.7	88.131	14.2	2
LENA636-59R3-130	53		59.3	78.68	13	2.05
LENA545-34-210	54.5	49	34		21	2.6
LENA550-30-270	55		30		27	7.5
LENA550-60-178	55		60		17.8	5
LENA560-63R2-140	56		63.2	108.219	14	2.44
LENA570-30-270	57		30		27	5.5
LENA570-35-232	57	53.8	35		23.2	3.2
LENA590-33-195	59	47	33		19.5	3.5
LENA590-48R1-290	59		48.1	-87	29	2
LENA590-60-178	59		60		17.8	3.5
LENA600-40-245	60	55.8	40		24.5	3.5
LENA605-52-205	60.5	56.3	52		20.5	3
LENA610-25-300	61	54	25		30	4
LENA630-100-130	63	59	100		13	3
LENA630-145-225	63		145		22.5	15
LENA-423-120	63.6		423.9	352	12	12.12
LENA637-37-270	63.7	59.3	37		27	3.3
LENA639-55-190	63.9	59.9	55		19	3
LENA639-65-178	63.9	59.9	65		17.8	3
LENA640-40-250	64	59	40		25	3
LENA650-42-250	65	59	42		25	3.5
LENA660-47-240	66	61.5	47		24	3
LENA662-42-285	66.2	61.2	42		28.5	4
LENA665-48-250	66.5	62.4	48		25	3.5
LENA668-52-247	66.8	62	52		24.7	3.2
LENA690-55-255	69	64	55		25.5	3
LENA690-35-295	69	60.5	35		29.5	3.2
LENA693-205	69.3	63.1			20.5	5.3
LENA700-145-225	70		145		22.5	13
LENA710-47-280	71	67	47		28	3



Glass Aspheric Lens for LIGHTING

Part no	Outer Diameter (mm)	Inner Diameter (mm)	Focal Length (f mm)	R	Center thickness (Tc mm)	Edge thickness (mm)
LENA720-52R4-288	72		52.4		28.8	3.38
LENA720-60-265	72	68	60		26.5	3.8
LENA738-73-242	73.8	69.9	73		24.2	4.1
LENA740-65-250	74	71	65		25	3.5
LENA740-58-275	74	70	58		27.5	4
LENA740-70-250	74	70.3	70		25	3.5
LENA750-70-236	75	70	70		23.6	4.5
LENA750-83R8-360	75		83.8	-88.636	36	13.44
LENA750-145-225	75		145		22.5	11.5
LENA760-53-300	76	69.5	53		30	4
LENA776-42-330	77.6	71	42		33	3
LENA780-50-305	78	71.1	50		30.5	4
LENA780-53-300	78	73	53		30	5
LENA782-50-329	78.2	73	50		32.9	4
LENA782-51-275	78.2	66.7	51		27.5	4
LENA790-45-340	79	74.2	45		34	4
LENA798-145-225	79.8		145		22.5	10
LENA800-32-400	80	72	32		40	4.5
LENA800-76R2-258	80		76.2	139.998	25.87	4.1
LENA800-115-174	80		115.9	117.14	17.49	4
LENA810-55-275	81	74	55		27.5	3.5
LENA830-92R4-215	83		92.4	113.84	21.5	2.04
LENA850-145-225	85		145		22.5	8.5
LENA880-145-225	88		145		22.5	7.5
LENA890-65-300	89	74	65		30	5.7
LENA890-161-177	89		161.3	-231.5	17.72	2.9
LENA898-145-225	89.8		145		22.5	7
LENA900-102-222	90		102.7	600	22.2	2.92
LENA910-145-225	91		145		22.5	6
LENA920-69R7-314	92		69.7		31.39	2
LENA930-145-225	93		145		22.5	5.5
LENA950-145-225	95		145		22.5	4.5
LENA970-180-153	97		180.3	353	15.34	2.91
LENA980-145-225	98		145		22.5	3
LENA1000-126-217	100		126.7	270	21.72	2.46
LENA1000-135-220	100	92	135		22	4
LENA1040-110-300	104	100	110		30	4.5
LENA1080-145-220	108	101	145		22	2.2
LENA1120-151-236	112		151.9	1100	23.63	3



Glass Aspheric Lens for LIGHTING

Part no	Outer Diameter (mm)	Inner Diameter (mm)	Focal Length (f mm)	R	Center thickness (Tc mm)	Edge thickness (mm)
LENA1120-176-208	112		176.4		20.8	2.99
LENA1280-293-175	128		293		17.59	4
LENA1300-211-243	130		211.3		24.3	5.45
LENA1300-355-134	130		355	740	13.43	2.5
LENA-41X39-188	41*38.6	38.2*34.3			18.8	2
LENA-41X39-229	41*38.6	38.1*35.6			22.9	2
LENA-90X69-175	90*68.5	83.5*61			17.5	3.5



Plastic Aspherical Lens for LIGHTING

Part Number	Outer Diameter (mm)	Inner Diameter (mm)	Focal Length (f mm)	Center thickness (Tc mm)	Edge Thickness (Te mm)	Surface Type
LENA070-011-20-PMMA-1	7	/	11	2	/	Type 1
LENA76-010-23-PMMA-1	7.6	7.2	10	2.25	0.7	Type 1
LENA080-012-23-PMMA-1	8	/	12	2.3	/	Type 1
LENA085-011-22-PMMA-1	8.5	/	11	2.2	/	Type 1
LENA85-008-28-PMMA-1	8.5	7.8	7.5	2.8	1	Type 1
LENA090-006-27-PMMA-1	9	7	6	2.7	1	Type 1
LENA100-014-27-PMMA-1	10	/	14	2.7	/	Type 1
LENA100-010-30-PMMA-1	10	9	10	3	1	Type 1
LENA100-006-30-PMMA-1	10	7.8	6	3	1.1	Type 1
LENA100-007-45-PMMA-1*	10	/	7	4.5	1.4	Type 1
LENA107-012-27-PMMA-1	10.7	9.9	12	2.7	0.8	Type 1
LENA108-030-27-PMMA-1	10.8	9.5	30	2.7	0.73	Type 1
LENA110-013-25-PMMA-1	11	8.6	13	2.5	1	Type 1
LENA110-024-20-PMMA-1	11	9.9	24	2	1	Type 1
LENA120-009-49-PMMA-1	12	8.9	9	4.85	1.5	Type 1
LENA125-008-45-PMMA-1	12.5	11.4	8	4.5	1.2	Type 1
LENA125-010-37-PMMA-1	12.5	11	10	3.7	1	Type 1
LENA130-025-23-PMMA-1	13	12	25	2.3	0.8	Type 1
LENA130-005-50-PMMA-1	13	10.9	5	5	1	Type 1
LENA130-009-52-PMMA-1*	13	/	9	5.2	1.6	Type 1
LENA135-023-27-PMMA-1	13.5	12	23	2.65	1	Type 1
LENA140-012-38-PMMA-1	14	12	12	3.8	1	Type 1
LENA140-010-45-PMMA-1	14	13	10	4.5	0.9	Type 1
LENA145-027-27-PMMA-1	14.5	13	27	2.65	1	Type 1
LENA145-010-88-PMMA-1	14.5	/	10	8.8	/	Type 1
LENA150-033-25-PMMA-1	15	13.5	33	2.5	1	Type 1
LENA150-020-38-PMMA-1	15	14.5	20	3.75	1	Type 1
LENA150-009-56-PMMA-1	15	13.1	9	5.6	1.2	Type 1
LENA150-032-25-PMMA-1	15	14	32	2.5	1	Type 1
LENA157-012-49-PC	15.7	14.8	12	4.9	1	Type 1
LENA160-023-37-PMMA-1	16	/	23	3.7	/	Type 1
LENA160-014-50-PMMA-1	16	14.8	14	5	1.2	Type 1
LENA160-020-65-PMMA-1*	16	/	20	6.5	3	Type 1
LENA160-00-77-PMMA-1	16	14.8	/	7.7	2.6	Type 1



Plastic Aspherical Lens for LIGHTING

Part Number	Outer Diameter (mm)	Inner Diameter (mm)	Focal Length (f mm)	Center thickness (Tc mm)	Edge Thickness (Te mm)	Surface Type
LENA170-028-32-PMMA-1	17	16	28	3.2	0.8	Type 1
LENA170-010-62-PMMA-1	17	15.8	10	6.2	1.4	Type 1
LENA175-015-42-PMMA-1	17.5	14	15	4.2	1.4	Type 1
LENA180-015-54-PMMA-1	18	14	15	5.4	1.85	Type 1
LENA180-018-68-PMMA-1*	18	/	18	6.8	2.5	Type 1
LENA180-018-84-PMMA-1	18	17	18	8.4	4.5	Type 1
LENA183-043-31-PMMA-1*	18.3	/	43	3.1	/	Type 1
LENA193-033-32-PMMA-1	19.3	18	33	3.2	0.9	Type 1
LENA193-017-56-PMMA-1	19.3	17.6	17	5.6	1.5	Type 1
LENA193-00-56-PMMA-3	19.3	17.6	/	5.6	1.5	Type 3
LENA193-030-42-PMMA-1	19.3	17.6	30	4.2	1.5	Type 1
LENA193-00-42-PMMA-2	19.3	17.6	/	4.2	1.5	Type 2
LENA200-034-27-PMMA-1	20	14.5	34	2.66	1	Type 1
LENA200-017-57-PMMA-1	20	17.4	16.5	5.7	1.5	Type 1
LENA200-00-56-PMMA-7	20	17.4	/	5.6	1.5	Type 7
LENA200-00-56-PMMA-3	20	17.4	/	5.6	1.5	Type 3
LENA205-012-80-PMMA-1	20.5	18.5	12	8	1.85	Type 1
LENA208-022-73-PMMA-1	20.8	19.5	22	7.3	1	Type 1
LENA208-041-30-PMMA-1	20.8	17.8	41	3	1	Type 1
LENA210-025-48-PMMA-1	21	18	25	4.8	1.6	Type 1
LENA225-016-80-PMMA-1	22.5	20.5	16	8	2	Type 1
LENA230-016-80-PMMA-1	23	21	16	8	1.7	Type 1
LENA230-00-80-PMMA-5	23	21	/	8	1.7	Type 5
LENA230-00-80-PMMA-4	23	21	/	8	1.7	Type 4
LENA230-00-80-PMMA-2	23	21	/	8	1.7	Type 2
LENA230-00-80-PMMA-3	23	21	/	8	1.7	Type 3
LENA230-00-80-PMMA-6	23	21	/	8	1.7	Type 6
LENA230-00-80-PMMA-7	23	21	/	8	1.7	Type 7
LENA238-026-59-PMMA-1	23.8	21	26	5.9	1.7	Type 1
LENA250-050-46-PMMA-1*	25	/	50	4.6	/	Type 1
LENA250-051-45-PMMA-1	25	23	51	4.5	1.8	Type 1
LENA250-018-104-PMMA-1*	25	/	18	10.4	3.2	Type 1
LENA269-018-108-PMMA-1	26.9	17.8	18	10.8	2.3	Type 1
LENA270-050-56-PMMA-1	27	25	50	5.57	1.1	Type 1
LENA277-019-86-PMMA-1	27.7	25.8	19	8.6	1.4	Type 1
LENA277-029-63-PMMA-1	27.7	25.8	29	6.3	1.4	Type 1
LENA277-047-48-PMMA-1	27.7	25	47	4.75	1.45	Type 1



Note: * means the lens without step

Plastic Aspherical Lens for LIGHTING

Part Number	Outer Diameter (mm)	Inner Diameter (mm)	Focal Length (f mm)	Center thickness (Tc mm)	Edge Thickness (Te mm)	Surface Type
LENA277-00-86-PMMA-2	27.7	25.8	/	8.6	1.4	Type 2
LENA277-00-86-PMMA-7	27.7	25.8	/	8.6	1.4	Type 7
LENA280-090-38-PMMA-1*	28	/	90	3.8	/	Type 1
LENA285-015-82-PMMA-1	28.5	20.6	15	8.2	2	Type 1
LENA287-045-54-PMMA-1	28.7	25.7	45	5.4	1.4	Type 1
LENA290-027-85-PMMA-1	29	27.5	27	8.5	1.5	Type 1
LENA290-00-85-PMMA-2	29	27.5	/	8.5	1.5	Type 2
LENA300-088-38-PMMA-1	30	/	88	3.8	/	Type 1
LENA300-025-81-PMMA-1	30	26.5	25	8.1	1.6	Type 1
LENA310-027-125-PMMA-1	31	29.3	27	12.5	2	Type 1
LENA310-00-102-PMMA-2	31	28.5	/	10.2	1	Type 2
LENA330-037-76-PMMA-1	33	29.5	36.5	7.6	1.6	Type 1
LENA335-080-50-PMMA-1	33.5	/	80	5	/	Type 1
LENA336-00-103-PMMA-3	33.6	31	/	10.3	1.45	Type 3
LENA337-032-133-PMMA-1	33.7	31.8	32	13.3	3	Type 1
LENA350-038-98-PMMA-1	35	33	38	9.75	2	Type 1
LENA350-028-113-PMMA-1	35	32	28	11.3	2.1	Type 1
LENA360-040-98-PMMA-1	36	33	40	9.8	2.1	Type 1
LENA370-053-84-PMMA-1	37	35	53	8.4	2.5	Type 1
LENA380-032-100-PMMA-1	38	33	32	10	2.3	Type 1
LENA380-00-100-PMMA-3	38	33	/	10	2.3	Type 3
LENA400-023-153-PMMA-1	40	35.3	23	15.3	2.5	Type 1
LENA448-063-100-PMMA-1	44.8	41.8	63	10	1.15	Type 1
LENA450-036-143-PMMA-1	45	42	36	14.3	2.1	Type 1
LENA483-00-100-PMMA-3	48.3	38	/	10	1.5	Type 3
LENA484-081-100-PMMA-1*	48.35	/	81	10	2	Type 1
LENA484-00-100-PMMA-2*	48.35	/	/	10	2	Type 2
LENA484-00-100-PMMA-3*	48.35	/	/	10	2	Type 3
LENA493-036-146-PMMA-1	49.3	44	36	14.6	2	Type 1
LENA600-045-192-PMMA-1	60	57.7	45	19.2	2.3	Type 1
LENA600-085-122-PMMA-1*	60	/	85	12.2	2.1	Type 1
LENA600-037-260-PMMA-1*	60	/	37	26	3	Type 1
LENA640-052-200-PMMA-1	64	58.5	52	20	3.2	Type 1
LENA680-220-100-PMMA-1	68	60.5	220	10	3.2	Type 1
LENA725-00-222-PMMA-2	72.5	64.2	/	22.2	3	Type 2
LENA26x19-008-139-PMMA	26*19	21*19	8	13.9	2.4	Type 1



Note: * means the lens without step

Surface pictures of Types

Type 1



Surface 1

Surface 2

Type 2



Surface 1

Surface 2

Type 3



Surface 1

Surface 2

Type 4



Surface 1

Surface 2

Type 5



Surface 1

Surface 2

Type 6



Surface 1

Surface 2

Type 7



Surface 1

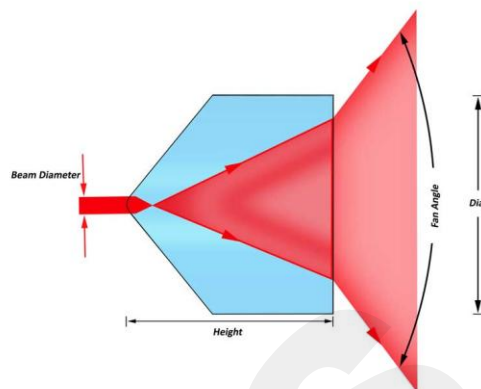
Surface 2



Powell lens

Specifications

- **Materials** : K9 / Fused Silicon / high refractive index glass
- **Diameter** : $\Phi 5 \sim \Phi 40$
- **Input Beam Diameter**: 0.5 to 25 mm
- **Fan Angle** : $1^{\circ} \sim 80^{\circ}$
- **Coating** : Customized



Part Number	Fan angle ($^{\circ}$)	Diameter (mm)	Beam Diameter (mm)
LENP020-0602	2	6	2
LENP005-0901	5	9	1
LENP005-0902	5	9	2
LENP005-0903	5	9	3
LENP005-0905	5	9	5
LENP010-0501	10	5	1
LENP010-0502	10	5	2
LENP010-0503	10	5	3
LENP010-0602	10	6	2
LENP010-0901	10	9	1
LENP010-0902	10	9	2
LENP010-0903	10	9	3
LENP015-0502	15	5	2
LENP015-0603	15	6	3
LENP015-0903	15	9	3
LENP015-0905	15	9	5
LENP020-0502	20	5	2
LENP020-0601	20	6	1
LENP020-0602	20	6	2
LENP020-0603	20	6	3
LENP020-0605	20	6	5
LENP020-0905	20	9	5
LENP020-2514	20	25	14
LENP030-0902	30	9	2
LENP030-0905	30	9	5
LENP045-61R5	45	6	1.5
LENP045-0902	45	9	2
LENP045-1814	45	18	14
LENP060-0902	60	9	2
LENP060-903SF5	60	9	3
LENP060-0904	60	9	4
LENP070-2914	70	29	14
LENP075-0901	75	9	1
LENP075-0902	75	9	2
LENP075-0903	75	9	3



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						Dw	DA	RC(S)	RA(S)
2207	D-ZF93			(002-193) (M-FDS2)		1	4	1	4
3283	H-ZLaF92		003283 S-LAH79			1	1	1	1
438945	H-FK95N		(439950) (S-FPL53)	(437-951) (FCD100)	(434-950) (K-CAFK95)	1	2	1	2
438945	D-FK95					1	2	1	2
457903	H-FK71			457-903 FCD10A	(459-900) (K-PFK90)	1	2	1	2
470669	H-QK1				487-704 K-FK5	5	5	1	3
487704	H-QK3L	487704 N-FK5	487702 S-FSL5	487-704 FC5		2	4	1	3
487704	D-QK3L	487704 N-FK5				2	4	1	3
487704	H-QK3LGTi	487705 FK5HTi	487703 S-FSL5Y			2	4	1	3
497816	H-FK61	497816 N-PK52A	497816 S-FPL51	497-816 FCD1	497-815 K-PFK80	1	5	1	3
497816	H-FK61B	497816 N-PK52A	497816 S-FPL51	497-816 FCD1B	497-815 K-PFK80	1	3	1	2
497816	D-FK61			497-816 M-FCD1	497-815 K-PFK80	1	2	1	1
497816	D-FK61A			497-816 M-FCD1		1	3	1	2
500621	H-K1					2	1	2	1
500660	H-K2	500658 BK4	500660 BSL4	500-660 BSC4		2	1	1	1
505647	H-K3	505650 BK5				3	4	2	3
508611	K4A					1	2	1	3
510634	H-K5	510635 BK1	510636 BSL1	510-634 BSC1		3	1	3	1
511605	H-K6	511604 K7	511605 NSL7	511605 C7		2	1	3	1
515606	H-K7					1	1	3	1
516568	H-K8					2	1	3	1
516641	D-K9	516641 P-BK7	516641 L-BSL7			1	2	1	2
516641	D-K9GT					1	2	1	2
517522	H-KF6		517524 S-NSL36	517-522 E-CF6		1	1	1	1
517642	H-K9L	517642 N-BK7	516641 S-BSL7	517-642 BSC7	516-641 K-BK7	3	1	1	1
517642	H-K9LGT	517642 N-BK7HT				3	1	1	1
518590	H-K10		518590 S-NSL3	518-590 E-C3		3	1	3	1
518635	D-K 59					1	1	1	1
519633	H-K90GTi	(517642) (N-BK7HTi)	(516643) (BSL7Y)			3	1	1	1
522595	H-K50	522595 N-K5	22598 S-NSL5	522-595 C5		2	3	3	1
523586	H-K51		523585 NSL51	523586 C12		2	1	2	1
525704	D-PK3					3	3	1	1
526602	H-K11	526600 BALK1	526600 NSL21	526-601 BACL1		2	1	3	1
530605	H-BaK1					1	1	1	1
532488	H-QF6A	532489 N-LLF6	532489 S-TIL6	532-488 E-FEL6		1	1	1	1
532488	QF6					2	1	3	1
534555	H-K12	534553 ZK5	534555 ZSL5	534-554 ZNC5		2	1	4	1
540597	H-BaK2	540597 N-BAK2	540595 S-BAL12	540-597 BAC2		1	1	1	2
541472	H-QF8		541472 S-TIL2	541-472 E-FEL2		3	2	3	1
541472	QF8					2	1	3	1



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						Dw	DA	RC(S)	RA(S)
547628	H-BaK3		548628BAL21			1	2	1	3
548458	H-QF1		548458 S-TIL1	548-458 E-FEL1		1	1	1	1
548459	QF1					1	1	3	1
552634	H-BaK4	552635 N-PSK3	552638BAL23	552-634 PCD3		3	3	1	2
561583	H-BaK5					1	2	1	1
564608	H-BaK6	564608 N-SK11	564607S-BAL41	564-608 BACD11		1	2	1	3
567428	H-QF56		567428S-TIL26	567-428 E-FL6		1	1	3	1
569560	H-BaK7	569560 N-BAK4	569563S-BAL14	569-560 BAC4		1	1	1	1
569560	H-BaK7GT	569560N-BAK4HT				1	1	1	1
569561	H-BaK7A	569560 N-BAK4	569563S-BAL14	569-560 BAC4		1	1	1	1
569630	H-ZK1	569631 PSK2	569631BAL22	569-631 PCD2		3	4	2	3
569713	H-ZPK7					1	1	1	1
569713	D-ZPK7					1	1	1	1
570495	H-BaF2					2	1	1	1
573575	H-BaK8	573576 N-BAK1	573578S-BAL11	573-575 BAC1		1	2	1	3
575413	QF3					1	1	3	1
575415	H-QF3		575415 S-TIL27			1	1	1	1
580537	H-BaF3	580539N-BALF4				1	1	1	1
581408	H-QF50A		581407S-TIL25	581-409 E-FL5		2	1	3	1
581409	H-QF50		581407S-TIL25	581-409 E-FL5		2	1	2	1
581409	QF50					1	1	3	1
581409	QF50GTi	581409 LF5HTi	581408PBL25Y			1	1	3	1
582420	QF5	582421 LF3	582421PBL23	582-420 FL3		1	1	2	1
583465	BaF4					1	1	1	1
583466	H-BaF4					1	1	1	1
583594	D-ZK2		583594L-BAL42	583-595 M-BACD12 (587-598) (K-CSK120)		1	6	2	3
583595	H-ZK2	583595 SK12	583594S-BAL42	583-595 BACD12		1	6	1	3
587596	D-ZK2L					1	6	2	3
589612	D-ZK3	589612P-SK58A	589612L-BAL35	589-613 M-BACD5N (591-607) (K-PSK100)		3	6	2	3
589613	H-ZK3	589613 N-SK5	589612S-BAL35	589-613 BACD5	589-612 K-SK5	2	3	1	3
589613	H-ZK3A	589613 N-SK5	589612S-BAL35	589-613 BACD5		2	3	3	2
592607	D-ZK3L					2	6	2	3
593673	H-ZPK3			593-670 PCD51 (595-678) (K-PSK400)		1	4	4	1
593683	H-ZPK5			593-686 FCD505 (592-683) (K-GFK68)		1	2	1	1
593683	D-ZPK5			593-686 FCD515 (592-683) (K-GFK68)		1	2	1	1
594673	D-ZPK3			(592-670) (M-PCD51)		1	4	4	1
596392	H-QF14		596392S-TIM8	596-392 E-F8		1	3	2	1
603380	H-F1		603380S-TIM5	603-380 E-F5		2	1	2	1
603380	F1	603380 F5	603380 PBM5	603-380 F5		2	1	3	1
603606	H-ZK14	603606 N-SK14	603607S-BSM14	603-607 BACD14	603-607 K-SK14	2	4	3	3
603655	H-ZPK2A		603655S-PHM53			1	4	3	1



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606439	H-BaF5	606437 N-BAF4	606437 S-BAM4			1	1	1	1
607567	H-ZK50	607567 N-SK2	607568 S-BSM2	607-567 BACD2		1	5	1	3
607567	H-ZK50GT	607567 N-SK2HT				1	5	1	3
608462	H-BaF6	(609466) (N-BAF52)				2	1	1	1
609579	D-ZK79	(610579) (P-SK60)				2	2	3	3
609589	H-ZK4	609589 SK3	609590 BSM3	609-589 BACD3		1	3	1	3
611558	H-ZK5	611559 SK8	611559 BSM8	611-558 BACD8		1	6	1	3
612441	TF3					2	6	1	3
613370	H-F2		613370 S-TIM3	613-370 E-F3		1	1	1	1
613370	F2	613370 F3	613370 PBM3	613-370 F3		2	1	3	2
613441	H-TF3L	613445 N-KZFS4	613443 S-NBM51	613-444 E-ADF10		1	1	1	1
613586	H-ZK6	613586 N-SK4	613587 S-BSM4	613-586 BACD4	613-586 K-SK4	2	3	1	3
613604	H-ZK7A					3	4	1	4
613606	H-ZK7					3	6	1	3
614400	H-BaF7					1	1	1	1
614400	BaF7					1	1	1	1
614551	H-ZK8	614552 SK9	614550 S-BSM9	614-551 BACD9		1	6	1	3
617366	F3	617366 F4	617366 PBM4	617-366 F4		2	1	3	1
617367	H-F3					2	1	3	1
617539	H-ZK20	617539 SSK1	617540 BSM21	617-539 BACED1		1	6	1	3
618634	H-ZPK1A	618634 N-PSK53A	618634 S-PHM52	618-634 PCD4	618-634 K-PSKn2	1	4	1	1
620364	H-F4	620364 N-F2	620363 S-TIM2	620-363 E-F2		2	1	1	1
620364	F4	620364 F2	620363 PBM2	620-363 F2		1	2	3	2
620364	F4GTi	620364 F2HT	620363 PBM2Y			1	2	3	2
620603	H-ZK9B	620603 N-SK16	620603 S-BSM16	620-604 BACD16	620-603 K-SK16	3	4	1	3
620603	H-ZK9A	620603 N-SK16	620603 S-BSM16	620-603 BACD16		3	4	1	3
621638	D-ZPKIA			(619-639) (M-PCD4)	(618-634) (K-PSKn2)	1	4	1	1
622532	H-ZBaF1	622533 N-SSK2	622532 S-BSM22			1	4	1	3
622567	H-ZK10					1	3	1	3
623569	H-ZK10L	623570 N-SK10	623570 S-BSM10	623-569 E-BACD10		1	3	1	3
623581	H-ZK21	623580 N-SK15	623582 S-BSM15	623-581 BACD15	623-581 K-SK15	2	4	1	3
624359	H-F5					2	1	2	1
624359	F5		621359 PBM11			1	1	2	1
624582	D-ZK21			(623-582) M-BACD15)		2	3	2	5
625356	F6	625356 F7		625-356 F7		1	3	3	3
626357	H-F13		626357 S-TIM1	626-357 E-F1		1	1	1	1
626357	F13	626357 F1	626357 PBM1	626-357 F1		1	3	1	1
626391	H-BaF8	626390 BASF1	626392 BAM21	626-391 BAFD1		2	1	1	1
636354	F7	636353 F6	636354 PBM6	636-353 F6		1	2	2	2
639555	H-ZK11	639554 N-SK18	639554 S-BSM18	639-555 BACD18	639-555 K-SK18	2	4	1	3
640345	H-F51		640345 S-TIM27	640-346 E-FD7		1	1	2	1



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640483	ZBaF2					1	3	1	3
640602	H-LaK4L	640601 N-LAK21	640601S-BSM81	640-602 LACL60	641-601 K-LaKn2	4	4	1	3
648338	H-ZF1	648338 N-SF2	648338 S-TIM22	648-338 E-FD2	648-339 K-SFLD2	1	1	1	1
648338	ZF1	648339 SF2	648338 PBM22	648-338 FD2	652-583 K-LaK7	1	2	1	3
648339	H-ZF1A	648338 N-SF2	648338 S-TIM22	648-338 E-FD2		2	1	2	1
651559	H-LaK10	651559 N-LAK22	651562 S-LAL54	650-557 LACL12		1	6	1	3
652584	H-LaK50A	652585 N-LAK7	652585 S-LAL7	652-584 LAC7		3	6	1	3
654337	ZF8	654337 SF9	654336 PBM29	654-337 FD9		1	2	1	2
654395	H-TF5	654397 N-KZF55	654397 S-NBH5	654-396 E-ADF50		2	1	3	1
657511	H-ZBaF3					1	3	1	3
658509	H-ZBaF50	658509 N-SSK5	658509S-BSM25	658-509 BACED5		1	3	1	3
660574	H-LaK1	660573 LAK11		660-573 LAC11		3	6	1	3
664355	H-ZBaF4	664360 N-BASF2				1	1	1	1
665546	H-LaK11					1	6	1	3
667331	H-ZF39		667330 S-TIM39			1	1	2	1
667484	H-ZBaF16	667484 BAFN11	667483 S-BAH11	667-483 BAF11		1	3	1	3
668419	ZBaF17	668419 BASF6	668419 BAH26	668-419 BAFD6		2	3	1	3
669554	D-LaK 70					1	6	1	3
670472	H-ZBaF52	670471 N-BAF10	670473 S-BAH10	670-472 BAF10	(665-473) (K-LCV93)	1	2	1	3
670517	H-LaK67		670516 LAL53			1	6	1	3
671473	H-ZBaF5					1	2	1	3
673322	H-ZF2	673323 N-SF5	673321 S-TIM25	673-322 E-FD5	673-322 K-SFLD5	1	1	1	1
673322	ZF2	673322 SF5	673321 PBM25	673-322 FD5		1	2	1	3
678549	D-LaK5		678549 L-LAL12			1	3	4	4
678555	H-LaK5A	678552 N-LAK12	678553 S-LAL12	678-555 LAC12	678-555 K-LaK12	3	6	1	3
683445	ZBaF51	683445 BAF50	683447 BAH51	683-447 BAF22		1	6	1	3
689311	D-ZF10	689313 P-SF8	689310 L-TIM28	689-312 M-FD80	(692-296) (K-CD300)	2	1	3	1
689312	H-ZF10	689313 N-SF8	689311 S-TIM28	689-312 E-FD8	689-311 K-SFLD8	1	1	1	1
689312	ZF10	689313 SF8	689311 PBM28	689-312 FD8	689-311 K-SFLD8	1	2	1	3
691548	H-LaK59A	691547 N-LAK9	691548 S-LAL9	691-547 LAC9	691-548 K-LaK9	3	4	1	5
692545	H-LaK2A					3	3	1	3
694492	H-LaF1		(694508) (S-LAL58)			1	3	1	3
694531	D-LaK6	694532 P-LAK35	694532 L-LAL13	694-532 M-LAC130	694-531 K-VC80	1	6	1	3
694534	H-LaK6A	694533 N-LAK13	694532 S-LAL13	694-533 LAC13	694-534 K-LaK13	2	6	1	3
697555	H-LaK51A	697554 N-LAK14	697555 S-LAL14	697-555 LAC14	697-556 K-LaK14	1	3	1	3
697562	H-LaK12	697562 LAK24	697565 LAL64			1	3	1	6
699301	H-ZF11	699302 N-SF15	699301 S-TIM35	699-301 E-FD15L	(692-296) (K-CD300)	1	1	2	1
699301	ZF11	699302 SF15	699301 PBM35	699-301 FD15	(692-296) (K-CD300)	1	1	1	1
700481	H-LaF51		700481 S-LAM51			2	3	1	4
702412	H-ZBaF20	702410 N-BASF52	702412 S-BAH27	702-412 BAFD7		1	2	1	3
713538	H-LaK7A	713538 N-LAK8	713539 S-LAL8	713-539 LAC8	713-539 K-LaK8	1	3	1	3



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717295	H-ZF3	717296 N-SF1	717295S-TIH1	717-295 E-FD1L	717-295 K-SFLD1	1	1	1	1
717295	ZF3	717295 SF1	717295 PBH1	717-295 FD1	717-295 K-SFLD1	1	2	1	2
717479	H-LaF2	717480 N-LAF3	717479S-LAM3	717-480 LAF3	717-479 K-LaF3	1	6	1	3
720437	H-LaF62		720437S-LAM52			1	3	1	3
720503	H-LaK8A	720506 N-LAK10	720502S-LAL10	720-503 LAC10	720-503 K-LaK10	1	3	1	3
720503	H-LaK8B	720506 N-LAK10	720502S-LAL10	720-503 LAC10		1	3	1	4
723380	H-ZBaF21		723380S-BAH28	723-380 BAFD8		1	2	1	3
728283	H-ZF4A	728285 N-SF10	728285S-TIH10	728-283 E-FD10L	728-284 K-SFLD10	1	1	1	1
728283	H-ZF4AGT				728-284 K-SFLD10	1	1	1	1
728283	ZF4	728284 SF10	728285 PBH10	728-283 FD10		1	6	3	3
729547	H-LaK52	729545 N-LAK34	729547S-LAL18	729-547 TAC8	729-547 K-LaK18	1	3	1	3
731405	D-LaF79		731405L-LAM69	731-405 M-LAF81		1	6	1	3
731539	D-LaK52			729-540 M-TAC80	734-512 K-LaKn12	1	3	2	2
734515	H-LaK54		734515S-LAL59	734-511 TAC4		1	3	1	3
740282	ZF5	740282 SF3	740283 PBH3	740-282 FD3	741-527 K-LaKn14	1	2	1	2
740283	H-ZF5		740283S-TIH3		743-492 K-LaFn5	1	1	1	1
741278	H-ZF50		741278S-TIH13	741-278 E-FD13		1	1	1	1
741278	ZF50	741276 SF13	741278 PBH13	741-278 FD13	744-449 K-LaF2	1	2	1	3
741526	H-LaK61		741527S-LAL61	741-526 TAC2		1	6	1	3
743492	H-LaF53	743494 N-LAF35	743493S-LAM60	743-492 NBF1		1	3	1	3
743493	D-LaF53		743-493 L-LAM60	743-493 M-NBF1		1	6	1	3
744449	H-LaF3B	744449 N-LAF2	744448S-LAM2	744-449 LAF2		1	3	1	3
747510	H-LaK3					1	3	1	3
750350	H-LaF4	750348 N-LAF7	750353S-LAM7	750-350 E-LAF7		1	2	1	3
750350	H-LaF4GT					1	2	1	3
754375	H-LaFL5					1	5	1	3
755275	H-ZF6	755274 N-SF4	755275S-TIH4	755-275 E-FD4L	755-275 K-SFLD4	1	1	2	1
755275	ZF6	755276 SF4	755275 PBH4	755-275 FD4	755-275 K-SFLD4	1	2	1	3
755523	H-LaK53B	755523 N-LAK33B	755523S-YGH51	755-523 TAC6	755-524 K-LaSKn1	1	3	1	2
755523	H-LaK53A					1	6	1	3
757477	H-LaF6LA	757478 LAFN24	757478S-LAM54	757-477 NBF2		1	6	1	3
762266	H-ZF12	762265 N-SF14	762265S-TIH14	762-266 FD140	762-265 K-SFLD14	1	1	2	1
762266	ZF12	762265 SF14	762265 PBH14	762-266 FD14		1	3	1	3
762401	H-LaF55		762401S-LAM55			2	3	1	4
768493	D-LaF050			768-492 M-TAF101 (766-498) (K-LAFK55T)		1	3	1	3
773496	H-LaF50B	773496 N-LAF34	773496S-LAH66	773-496 TAF1	773-496 K-LaSFN7	1	3	1	3
774496	D-LaF50			(773-495) (M-TAF1) (772-500) (K-LaFK50)		1	3	1	4
782371	H-LaF7	782372 LAF22A				1	5	1	3
785257	H-ZF13	785257 N-SF11	785257S-TIH11	785-257 FD110	(785-259) (K-SFLD11)	1	1	1	1
785257	H-ZFI3GT					1	1	1	1
785258	ZF13	785258 SF11	785257 PBH11	785-257 FD110		1	3	1	3



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						Dw	DA	RC(S)	RA(S)
785261	ZF51	785261 SF56A	785262 PBH23	785-261 FDS3		1	3	1	3
786442	H-LaF52	786441 N-LAF33	786442 S-LAH51	786-439 NBFD11	(785-437) (K-LaSn4)	1	2	1	3
788475	H-LaFIOLA	788475 N-LAF21	788474 S-LAH64	788-475 TAF4	788-474 K-LaSn16	1	3	1	3
800422	H-LaF54	800424 N-LAF36	800422 S-LAH52	800-423 NBFD12	800-423 K-LaSn3	1	2	1	3
801350	H-ZLaF66	801350 N-LASF45	801350 S-LAM66			1	3	1	3
801350	H-ZLaF66GT	801350 N-LASF45HT			804-466 K-LaSn6	1	3	1	3
802443	H-ZLaF1	802443 LASF11		802-443 NBFD14	804-466 K-LaSn6	1	6	1	3
803455	D-ZLaF50			(801-455) (M-TAF31)	805-254 K-SFLD6	1	3	1	4
803468	H-ZLaF2A	803468 LASF1	803467 LAH62		805-254 K-SFLD6	1	3	1	3
804466	H-ZLaF50E	804465 N-LASF44	804466 S-LAH65VS	804-465 TAF3D	805-396 K-LaSn2	1	3	1	2
804466	H-ZLaF50D	804465 N-LASF44	804466 S-LAH65VS	804-465 TAF3		1	3	1	2
805255	H-ZF7LA	805254 N-SF6	805254 S-TIH6	805-255 FD60		1	1	1	1
805255	H-ZF7LAGT	805254 N-SF6HT ultra		805-255 FD60-W	806-407 K-LaSn1	1	1	1	1
805255	ZF7L	805254 SF6	805254 PBH6	805-255 FD6		1	4	1	3
805255	ZF7LGT				(810-410) (K-VC89)	1	4	1	3
805396	H-ZLaF51		(804396) (S-LAH63)	805-396 NBFD3	816-467 K-LaSn9	1	3	1	3
806254	ZF7					1	5	1	3
806333	H-ZLaF56B			806-333 NBFD15		1	2	1	3
806410	H-ZLaF52A	806406 N-LASF43	806409 S-LAH53V	806-407 NBFD13		1	3	1	4
806410	H-ZLaF52	806406 N-LASF43	806409 S-LAH53V	806-407 NBFD13		1	3	1	3
808227	H-ZF71			808-228 FD225		1	1	1	1
808227	H-ZF7IGT		808228 S-NPH1W	808-228 FD225		1	1	1	1
809410	D-ZLaF81	809405 P-LASF50		(808-409) (MC-NBFD135)		1	6	1	3
810410	D-ZLaF52LA	810409 P-LASF51				1	6	1	3
816465	H-ZLaF69		816466 S-LAH59	816-466 TAF5		1	2	1	3
816466	H-ZLaF69A		816466 S-LAH59	816-466 TAF5		1	2	1	3
822427	D-ZLaF61			(821-427) (M-TAFD51)		2	3	1	4
834372	H-ZLaF53B	834373 N-LASF40	834372 S-LAH60	834-373 NBFD10	834-373 K-LaSn14	1	2	1	4
834372	H-ZLaF53BG				835-427 K-LaSn8	1	2	1	4
835427	H-ZLaF55D	835431 N-LASF41	835427 S-LAH55VS	835-427 TAFD5G	835-427 K-LaSn8	1	2	1	2
835427	H-ZLaF55C	835431 N-LASF41	835427 S-LAH55VS	835-427 TAFD5F		1	2	1	3
846401	D-ZLaF85LN		854404 L-LAH85V	(851-401) (M-TAFD305)		1	2	2	3
847238	H-ZF52	847238 N-SF57	847238 S-TIH53	847-238 FDS90	847-239 K-SFLDn3	1	1	2	1
847238	H-ZF52GT	847238 N-SF57HT ultra	847238 S-TIH53W	847-238 FDS90-SG	847-239 K-SFLDn3	1	1	2	1
847238	H-ZF52TT					1	1	2	1
847238	H-ZF52A	847238 N-SF57	847238 S-TIH53	847-238 FDS90		1	1	2	1
847238	ZF52	847238 SF57	847239 PBH53	847-238 FDS9		1	6	1	3
850300	H-ZLaF76A		850300 S-NBH57			1	1	1	2
850301	H-ZLaF76		850300 S-NBH57			1	3	1	3
850322	H-ZLaF71AGT	850322 N-LASF9				1	1	1	2
850323	H-ZLaF71		850323 S-LAH71			1	3	1	3



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						Dw	DA	RC(S)	RA(S)
852401	D-ZLaF85A		(854404) (L- LAH85V)	(851-401) (M-TAFD305)		1	5	1	3
854406	D-ZLaF85A		854404 L- LAH85V	(851-401) (M-TAFD305)	(854-406) (K-VC185)	1	5	1	3
855366	H-ZLaF3	855366 LASF13		855-366 TAFD13		1	5	1	3
855406	D-ZLaF85LS		854404 L- LAH85V	(851-401) (M-TAFD305)		1	2	1	2
881402	H-ZLaF73			881401 TAFD33		1	2	2	1
883392	H-ZLaF68N					1	1	1	1
883408	H-ZLaF68B	8834408 N-LASF31A	883408 S-LAH58	883-408 TAFD30	883-408 K-LaSFN17	1	1	1	2
883409	H-ZLaF68C	8834408 N-LASF31A	883408 S-LAH58	883-408 TAFD30		1	1	1	2
884372	D-ZLaF67			(882-372) (M-TAFD307)		1	2	1	3
901371	H-ZLaF78B			(900-374) (TAFD37A)		1	1	1	1
904313	H-ZLaF75A	904313 N-LASF46A	904313 S-LAH95	904-313 TAFD25		1	2	1	3
904314	H-ZLaF75B	904313 N-LASF46B	904313 S-LAH95	904-313 TAFD25		1	1	1	1
911353	H-ZLaF4LA			911-353 TAFD35		1	1	1	2
911353	H-ZLaF4LB			911-353 TAFD35		1	1	2	1
923189	H-ZF72A		923189 S-NPH2			1	1	1	1
923189	H-ZF2AGT					1	1	1	1
923209	H-ZF62	92309 N-SF66		923-209 E-FDS1		1	1	1	1
923209	H-ZF62GT	92309 N-SF66		923-209 E-FDS1-W		1	1	1	1
946179	H-ZF88			946-180 FDS18		1	1	1	1
946179	H-ZF88GT			946-180 FDS18-W		1	1	1	1
954323	H-ZLaF89L		954323 S-LAH98	954-323 TAFD45		1	1	1	1
959175	H-ZF73		959175 S-NPH3			1	1	1	1
959175	H-ZF73GT					1	1	1	1

Note:

*The "()" indicates a significant difference in parameters.

**Chemical Properties

The chemical stability is the ability of the polished surface to resist erosive substance of sorts during the glass component being processed and afterward being applied.

1. Resistance to Humidity RC(S) (Surface Method)

According to the testing method of GB/T 7962.15-2010, the comparison of haze with H (BaK7), H(ZK9), the resistance of the polished glass surface to humidity, RC(S) is classified into 4 grades (Table 1):

Table 1

Grade (RC)	Haze Comparison	Note
1	H≤H (BaK7)	At 50°C and the relative humidity of 85%, the hydrolysis "spot" is not formed on the polished glass surface till 20 hours later
2	H≤H (BaK7)	At 50°C and the relative humidity of 85%, the hydrolysis "spot" is formed on the polished glass surface till 20 hours later
3	H(ZK9)≥H>H(BaK7)	H(ZK9)≥H>H(BaK7), the resistance of the glass to humidity is classified into grade 3
4	H>H(ZK9)	H>H(ZK9), the resistance of the glass to humidity is classified into grade 4



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2. Resistance to Acid RA(S) (Surface Method)

According to testing method of GB/T 7962.14-2010, resistance of the polished glass surface to acid, RA(S) is classified into 6 grades (Table 2):

Table 2

Grade(RA)	Testing solution	Testing time t	Note
1	PH=2.9 ethylic acid	t≥5h	No appearance of purplish blue interference color, mixed color or layer of erosion
2	PH=2.9 ethylic acid	30min≤t<5h	appearance of purplish blue interference color , but no appearance of mixed color or layer of erosion
3	PH=4.6 acetate	t≥30min	appearance of purplish blue interference color or mixed color, but no layer of erosion
4	PH=4.6 acetate	5min≤t<30min	appearance of purplish blue interference color or mixed color, but no layer of erosion
5	PH=6.0 distilled water	t>3h	appearance of purplish blue interference color or mixed color, but no layer of erosion
6	PH=6.0 distilled water	t≤3h	appearance of purplish blue interference color , mixed color or layer of erosion

3. Durability of Water DW (PowderMethod)

The water durability can be measured by the method specified in GB/T 17129. Dw is calculated by the following formula:

$$Dw = \frac{B-C}{B-A} \times 100\%$$

Where: Dw: soaking-out percentage, %;

B: mass of filter and sample, g;

C: mass of filter and soaked sample, g;

A: mass of filter, g.

According to the calculation results, Dw is classified into 6 grades (Table 6):

4. Durability of Acid DA (PowderMethod)

The acid durability can be measured by the method specified in GB/T 17129. DA is calculated by the following formula:

Table 3

Grade	1	2	3	4	5	6
Soaking-out percentage Dw	<0.04	0.04~0.10	0.10~0.25	0.25~0.60	0.60~1.10	>1.10

$$DA = \frac{B-C}{B-A} \times 100\%$$

Where: DA: soaking-out percentage, %;

B: mass of filter and sample, g;

C: mass of filter and soaked sample, g;

A: mass of filter, g.

According to the calculation results, DA is classified into 6 grades (Table 4):

Table 4

Grade	1	2	3	4	5	6
Soaking-out percentage DA	<0.20	0.20~0.35	0.35~0.65	0.65~1.20	1.20~2.20	>2.20

5. Climatic Resistance (CR)

Testing samples are exposed to water vapor saturated atmosphere with relative humidity 90%, the temperature of which alternates between 40°C~5 0°C per hour. The periodic change lasts for 15 times. The testing samples are removed from the climate chamber after 15 testing periods. The difference of haze before and after testing (ΔH) is used as a measure of CR classification.

Table 5 lists the climatic resistance grades.

Table 5

Grade	1	2	3	a	4 b	c
Increase inhaze ΔH(%)	<0.3	0.3x~1.0	1.0~2.0	2.0~4.0	4.0~6.0	≥6.0

***reference: CDGM optical glass data-sheet

