

System/Prescription Data

File : C:\Users\jwhueh\Solidworks\zemax\APOImager\APOImager_f8v240.zmx
 Title: APO 3.5-m
 Date : 10/11/2013
 Configuration 1 of 2

LENS NOTES:

GENERAL LENS DATA:

Surfaces : 37
 Stop : 2
 System Aperture : Entrance Pupil Diameter = 3404.6
 Glass Catalogs : SCHOTT MISC
 Ray Aiming : Off
 Apodization : Uniform, factor = 0.00000E+000
 Temperature (C) : 2.00000E+001
 Pressure (ATM) : 1.00000E+000
 Adjust Index Data To Environment : Off
 Effective Focal Length : 27229.22 (in air at system temperature and pressure)
 Effective Focal Length : 27229.22 (in image space)
 Back Focal Length : 53.54746
 Total Track : 4845.61
 Image Space F/# : 7.997773
 Paraxial Working F/# : 7.997773
 Working F/# : 7.997758
 Image Space NA : 0.06239559
 Object Space NA : 1.702299e-007
 Stop Radius : 1702.3
 Paraxial Image Height : 47.28638
 Paraxial Magnification : 0
 Entrance Pupil Diameter : 3404.6
 Entrance Pupil Position : 4845.61
 Exit Pupil Diameter : 697.465
 Exit Pupil Position : -5578.167
 Field Type : Angle in degrees
 Maximum Radial Field : 0.0995
 Primary Wavelength : 0.8 µm
 Lens Units : Millimeters
 Angular Magnification : 4.865865

Fields : 5

Field Type : Angle in degrees

#	X-Value	Y-Value	Weight
1	0.000000	0.000000	0.500000
2	0.000000	0.050000	1.000000
3	0.000000	0.075000	2.000000
4	0.000000	0.090000	0.500000
5	0.000000	0.099500	0.500000

Vignetting Factors

#	VDX	VDY	VCX	VCY	VAN
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.000000	0.000000	0.000000	0.000000	0.000000
3	0.000000	0.000000	0.000000	0.000000	0.000000
4	0.000000	0.000000	0.000000	0.000000	0.000000
5	0.000000	0.000000	0.000000	0.000000	0.000000

Wavelengths : 3

Units: µm

#	Value	Weight
1	0.400000	1.000000
2	0.600000	1.000000
3	0.800000	1.000000

SURFACE DATA SUMMARY:

Surf	Type	Radius	Thickness	Glass	Diameter	Conic	Comment
OBJ	STANDARD	Infinity	Infinity		0	0	
1	STANDARD	Infinity	4845.61		1056.996	0	M2 BOT BAF
STO	STANDARD	-12279.7	-725.3	MIRROR	3505.2	-1.01927	PRIMARY
3	STANDARD	Infinity	-403.86		854.08	0	M3 BASE BAF OD
4	STANDARD	Infinity	-487.43		839.48	0	M3 EXT. BAF1
5	STANDARD	Infinity	-415.54		761.74	0	M3 EXT. BAF2
6	STANDARD	Infinity	-295.4		696.72	0	M3 EXT. BAF3
7	STANDARD	Infinity	-2506.37		650.24	0	M3 EXT. BAF4
8	STANDARD	Infinity	0		756.4429	0	FOCUS CTRL.
9	STANDARD	-3163	147.7	MIRROR	836.32	-2.1831	SECONDARY
10	STANDARD	Infinity	0		730.1793	0	FOCUS CTRL. SLAV
11	STANDARD	Infinity	2195.24		892.08	0	BOT OF M2 CONE
12	STANDARD	Infinity	128.12		603.02	0	TOP OF M3 CONE
13	STANDARD	Infinity	173.99		536.44	0	M3 INT. BAF1
14	STANDARD	Infinity	232.66		520.7	0	M3 INT. BAF2
15	STANDARD	Infinity	299.72		500.12	0	M3 INT. BAF3
16	STANDARD	Infinity	372.36		473.2	0	M3 INT. BAF4
17	STANDARD	Infinity	554.36		440.18	0	M3 INT. BAF5

18	STANDARD	Infinity	320.32		410	0	M3 BASE BAF ID
19	COORDBRK	-	0		-	-	
20	STANDARD	Infinity	0	MIRROR	799.719	0	TERTIARY
21	COORDBRK	-	-425.45		-	-	
22	TOROIDAL	Infinity	-1403.35		341.1012	0	M3 CAP
23	STANDARD	Infinity	-154.25		224.9831	0	PMSS INNER EDGE
24	STANDARD	Infinity	-110.69		212.2199	0	NA2 Baffle Cone
25	STANDARD	Infinity	-80.37		203.0611	0	NA2 BAF1
26	STANDARD	Infinity	-120.12		196.411	0	NA2 BAF2
27	STANDARD	Infinity	-156.29		186.4718	0	NA2 BAF3
28	STANDARD	Infinity	-221.46		173.5398	0	NA2 BAF4
29	STANDARD	Infinity	-185.52		155.2155	0	gbox baffle mount
30	STANDARD	Infinity	-64.99987		139.8649	0	instr mount
31	STANDARD	-4645.241	-15	N-SK16	140	0	L1
32	STANDARD	2410.736	-4.999855		140	0	
33	STANDARD	-109.6254	-35	N-SK14	130	0	L2
34	STANDARD	-1047.664	-5.005489		130	0	
35	STANDARD	-885.9595	-15	F2	116	0	L3
36	STANDARD	-85.60075	-53.54746		116	0	
IMA	STANDARD	Infinity			92.45671	0	detector

EDGE THICKNESS DATA:

Surf	X-Edge	Y-Edge
1	4720.553794	4720.553794
STO	-600.243794	-600.243794
3	-403.860000	-403.860000
4	-487.430000	-487.430000
5	-415.540000	-415.540000
6	-295.400000	-295.400000
7	-2506.370000	-2506.370000
8	-27.499697	-27.499697
9	175.199697	175.199697
10	0.000000	0.000000
11	2195.240000	2195.240000
12	128.120000	128.120000
13	173.990000	173.990000
14	232.660000	232.660000
15	299.720000	299.720000
16	372.360000	372.360000
17	554.360000	554.360000
18	320.320000	320.320000
19	0.000000	0.000000
20	0.000000	0.000000
21	-389.769415	-425.450000
22	-1439.030585	-1403.350000
23	-154.250000	-154.250000
24	-110.690000	-110.690000
25	-80.370000	-80.370000
26	-120.120000	-120.120000
27	-156.290000	-156.290000
28	-221.460000	-221.460000
29	-185.520000	-185.520000
30	-65.527321	-65.527321
31	-13.456047	-13.456047
32	-27.365321	-27.365321
33	-15.669371	-15.669371
34	-4.887699	-4.887699
35	-35.743963	-35.743963
36	-30.902949	-30.902949
IMA	0.000000	0.000000

SOLVE AND VARIABLE DATA:

Semi Diameter	1	: Fixed
Semi Diameter	2	: Fixed
Semi Diameter	3	: Fixed
Semi Diameter	4	: Fixed
Semi Diameter	5	: Fixed
Semi Diameter	6	: Fixed
Semi Diameter	7	: Fixed
Semi Diameter	9	: Fixed
Thickness of	10	: Solve, Pickup from surface 8 scaled by -1, offset by 0
Semi Diameter	11	: Fixed
Semi Diameter	12	: Fixed
Semi Diameter	13	: Fixed
Semi Diameter	14	: Fixed
Semi Diameter	15	: Fixed
Semi Diameter	16	: Fixed
Semi Diameter	17	: Fixed
Semi Diameter	18	: Fixed
Semi Diameter	20	: Fixed
Parameter 3 Surf	21	: Solve, Pickup from surface 19 scaled by 1, offset by 0
Semi Diameter	31	: Fixed
Semi Diameter	32	: Solve, pickup from surface 31 scaled by 1
Semi Diameter	33	: Fixed
Semi Diameter	34	: Solve, pickup from surface 33 scaled by 1
Semi Diameter	35	: Fixed
Semi Diameter	36	: Solve, pickup from surface 35 scaled by 1

ELEMENT VOLUME DATA:

For centered elements with plane or spherical circular faces, exact volumes are computed by assuming edges are squared up to the larger of the front and back radial aperture.

For all other elements, approximate volumes are numerically integrated to 0.1% accuracy. Zero volume means the volume cannot be accurately computed.

Single elements that are duplicated in the Lens Data Editor for ray tracing purposes may be listed more than once yielding incorrect total mass estimates.

	Volume cc	Density g/cc	Mass g
Element surf 31 to 32	219.024033	3.580000	784.106036
Element surf 33 to 34	341.363599	3.440000	1174.290779
Element surf 35 to 36	262.062985	3.599000	943.164683
Total Mass:			2901.561499

F/# DATA:

F/# calculations consider vignetting factors and ignore surface apertures.

#	Wavelength: Field	0.400000		0.600000		0.800000	
		Tan	Sag	Tan	Sag	Tan	Sag
1	0.0000, 0.0000 (deg):	7.9977	7.9977	7.9923	7.9923	7.9978	7.9978
2	0.0000, 0.0500 (deg):	7.8669	7.9547	7.8628	7.9497	7.8686	7.9553
3	0.0000, 0.0750 (deg):	7.6851	7.8975	7.6826	7.8930	7.6888	7.8987
4	0.0000, 0.0900 (deg):	7.5247	7.8490	7.5237	7.8449	7.5301	7.8508
5	0.0000, 0.0995 (deg):	7.3980	7.8119	7.3981	7.8081	7.4047	7.8140