



HOYA CANDEO OPTRONICS CORPORATION

Thickness (1.7) mm

ND3

Transmittance (T) units: %

λnm	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390
T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
λnm	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590
T	1.2	1.6	1.8	2.2	2.2	2.5	3.0	3.0	2.9	2.7	2.6	2.6	2.7	2.8	2.9	2.9	2.9	2.7	2.5	2.5
λnm	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790
T	2.6	2.8	3.0	3.1	3.3	3.4	3.7	4.3	5.2	6.5	7.8	9.1	10.1	10.9	11.6	12.1	12.5	12.9	13.2	13.4
λnm	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990
T	13.6	13.8	14.0	14.1	14.1	14.2	14.1	14.1	14.1	14.0	13.9	13.8	13.7	13.5	13.4	13.3	13.2	13.1	13.0	12.9
λnm	1000	1010	1020	1030	1040	1050	1060	1070	1080	1090	1100	1120	1140	1160	1180	1200				
T	12.8	12.7	12.7	12.6	12.6	12.5	12.5	12.5	12.5	12.6	12.6	12.7	13.0	13.2	13.6	14.1				

Refractive Index/Absorption coefficient/Reflection coefficient

λnm	400	500	600	700	800	900	1000
n	1.533	1.522	1.516	1.513	1.511	1.509	1.508
K	8.3E-05	8.5E-05	1.0E-04	8.5E-05	7.4E-05	8.3E-05	9.6E-05
P	0.915	0.918	0.919	0.920	0.921	0.921	0.921

Classes of Bubbles and Inclusions

Bubble Class
3

Color Specification

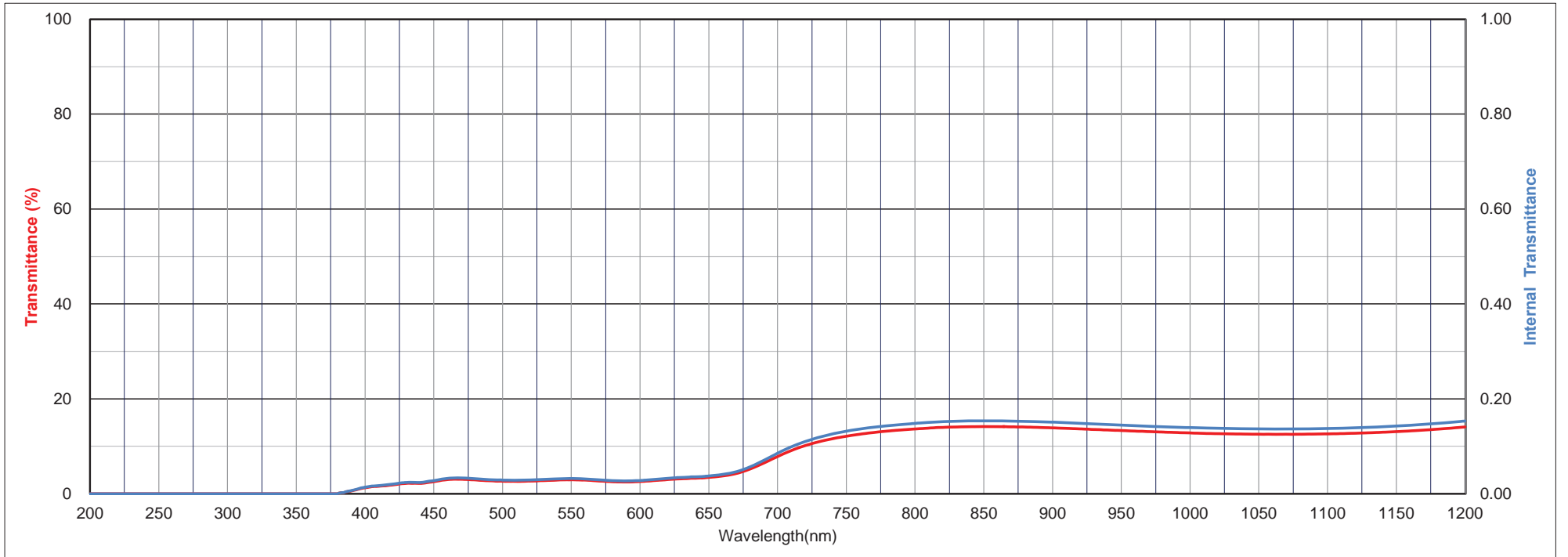
	x	y	Y	λ _d	P _e
A	0.460	0.405	3	600	7
C	0.319	0.325	3	578	5
D65	0.322	0.337	3	577	5

Properties

Chemical		Thermal				Mechanical		Others
D _w	D _A	T _g	T _s	α _{-30/70}	α _{100/300}	H _k	F _A	d
1	3	490	565	-	65	530	100	2.41

Tolerance of Transmittance (T)

Average Transmittance at 400nm-700nm	
Tav(%)	OD
3±0.5	1.5 ±0.1



All data is mean values of various melts.

The content of this catalog is accurate as of April ,2014



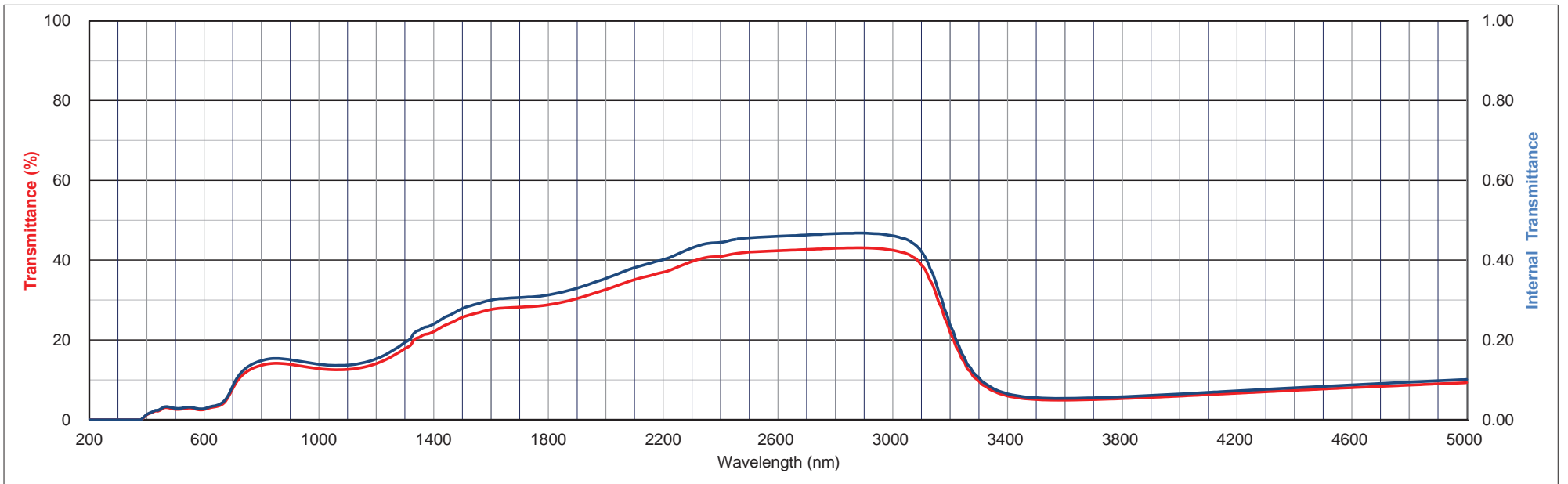
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λnm	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390
T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
λnm	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590
T	1.2	1.6	1.8	2.2	2.2	2.5	3.0	3.0	2.9	2.7	2.6	2.6	2.7	2.8	2.9	2.9	2.9	2.7	2.5	2.5
λnm	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790
T	2.6	2.8	3.0	3.1	3.3	3.4	3.7	4.3	5.2	6.5	7.8	9.1	10.1	10.9	11.6	12.1	12.5	12.9	13.2	13.4
λnm	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990
T	13.6	13.8	14.0	14.1	14.1	14.2	14.1	14.1	14.1	14.0	13.9	13.8	13.7	13.5	13.4	13.3	13.2	13.1	13.0	12.9
λnm	1000	1010	1020	1030	1040	1050	1060	1070	1080	1090	1100	1110	1120	1130	1140	1150	1160	1170	1180	1190
T	12.8	12.7	12.7	12.6	12.6	12.5	12.5	12.5	12.5	12.6	12.6	12.7	12.7	12.8	13.0	13.1	13.2	13.4	13.6	13.8
λnm	1200	1210	1220	1230	1240	1250	1260	1270	1280	1290	1300	1310	1320	1330	1340	1350	1360	1370	1380	1390
T	14.1	14.3	14.6	15.0	15.3	15.7	16.1	16.5	16.9	17.4	17.8	18.2	18.7	19.8	20.4	20.7	21.1	21.4	21.5	21.8
λnm	1400	1410	1420	1430	1440	1450	1460	1470	1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580	1590
T	22.1	22.5	22.9	23.3	23.7	24.0	24.3	24.6	25.0	25.4	25.7	25.9	26.2	26.4	26.5	26.7	26.9	27.1	27.3	27.5
λnm	1600	1610	1620	1630	1640	1650	1660	1670	1680	1690	1700	1710	1720	1730	1740	1750	1760	1770	1780	1790
T	27.6	27.8	27.9	27.9	28.0	28.0	28.1	28.1	28.2	28.2	28.2	28.3	28.3	28.3	28.4	28.4	28.5	28.5	28.6	28.7
λnm	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990
T	28.8	28.9	29.1	29.2	29.3	29.5	29.7	29.8	30.0	30.2	30.4	30.6	30.8	31.0	31.3	31.5	31.7	31.9	32.2	32.4
λnm	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950
T	32.6	33.9	35.1	36.0	37.0	38.3	39.7	40.7	40.9	41.6	42.0	42.2	42.4	42.5	42.7	42.8	43.0	43.1	43.1	42.9
λnm	3000	3050	3100	3150	3200	3250	3300	3350	3400	3450	3500	3550	3600	3650	3700	3750	3800	3850	3900	3950
T	42.5	41.6	38.8	31.7	21.9	14.4	9.7	7.2	6.0	5.4	5.1	4.9	4.9	5.0	5.1	5.2	5.3	5.5	5.6	5.8
λnm	4000	4050	4100	4150	4200	4250	4300	4350	4400	4450	4500	4550	4600	4650	4700	4750	4800	4850	4900	4950
T	5.9	6.1	6.3	6.5	6.7	6.8	7.0	7.2	7.4	7.5	7.7	7.9	8.0	8.2	8.4	8.5	8.7	8.9	9.0	9.1
λnm	5000																			
T	9.3																			



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