

HOYA CANDEO OPTRONICS CORPORATION

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	0.3	4.6	17.7	34.8	42.9	38.7	58.4
λnm	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590
T	65.4	63.8	63.8	65.4	64.8	67.4	70.3	71.0	70.9	71.0	71.2	71.5	71.9	72.1	72.2	72.2	72.2	72.0	71.5	71.1
λnm	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790
T	70.9	70.8	70.7	70.5	70.1	69.7	69.4	69.2	69.1	69.0	68.8	68.3	67.6	66.7	65.8	64.8	63.7	62.6	61.6	60.5
λnm	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990
T	59.6	58.7	57.9	57.1	56.3	55.6	54.9	54.2	53.7	53.1	52.5	51.9	51.4	50.9	50.4	49.9	49.5	49.0	48.6	48.3
λnm	1000	1010	1020	1030	1040	1050	1060	1070	1080	1090	1100	1120	1140	1160	1180	1200				
T	47.9	47.6	47.3	47.0	46.8	46.6	46.4	46.3	46.1	46.1	46.0	46.0	46.1	46.4	46.7	47.2				

Refractive Index/Absorption coefficient/Reflection coefficient

λnm	400	500	600	700	800	900	1000
n	1.520	1.510	1.504	1.501	1.499	1.497	1.496
K	4.0E-06	3.4E-06	4.4E-06	5.8E-06	9.3E-06	1.4E-05	1.8E-05
P	0.918	0.921	0.922	0.923	0.923	0.924	0.924

Classes of Bubbles and Inclusions

Bubble Class
3

Color Specification

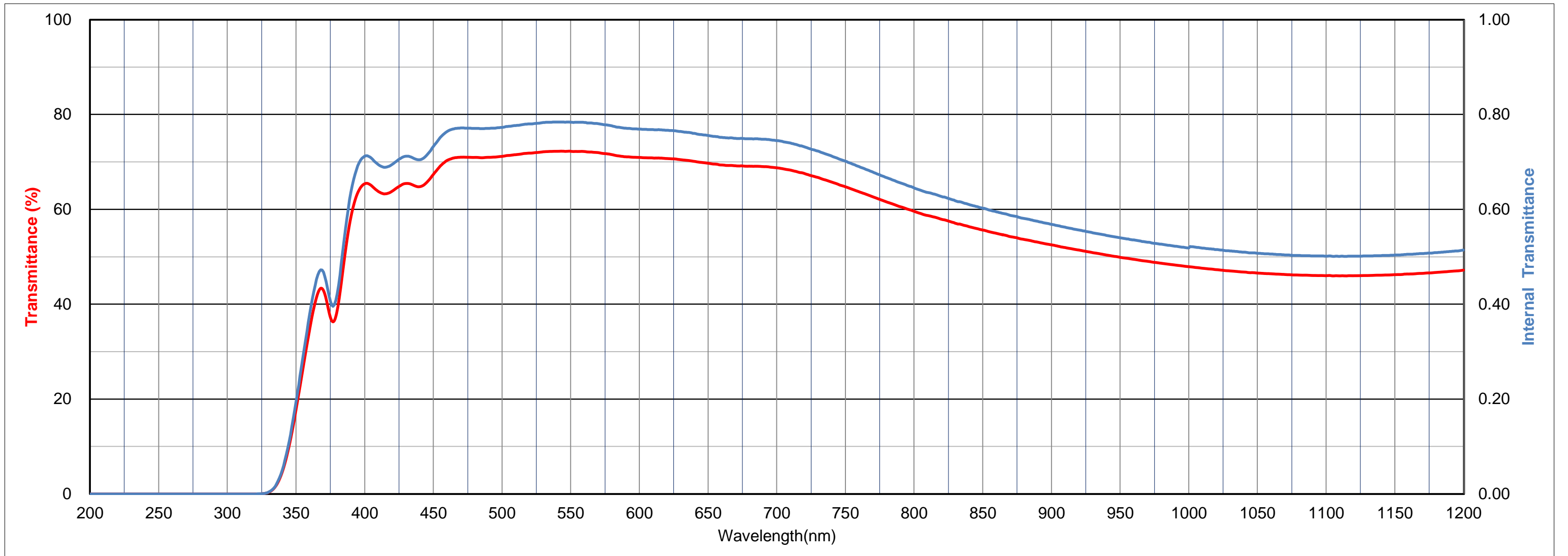
	x	y	Y	λ _d	P _e
A	0.448	0.411	71	572	3
C	0.312	0.324	72	564	3
D65	0.315	0.336	72	563	3

Properties

Chemical		Thermal				Mechanical		Others
D _w	D _A	T _g	T _s	α _{-30/70}	α _{100/300}	H _K	F _A	d
4	5	470	540	66	72	510	100	2.39

Tolerance of Transmittance (T)

Average Transmittance at 400nm-700nm	
Tav(%)	OD
70±5	0.15±0.04





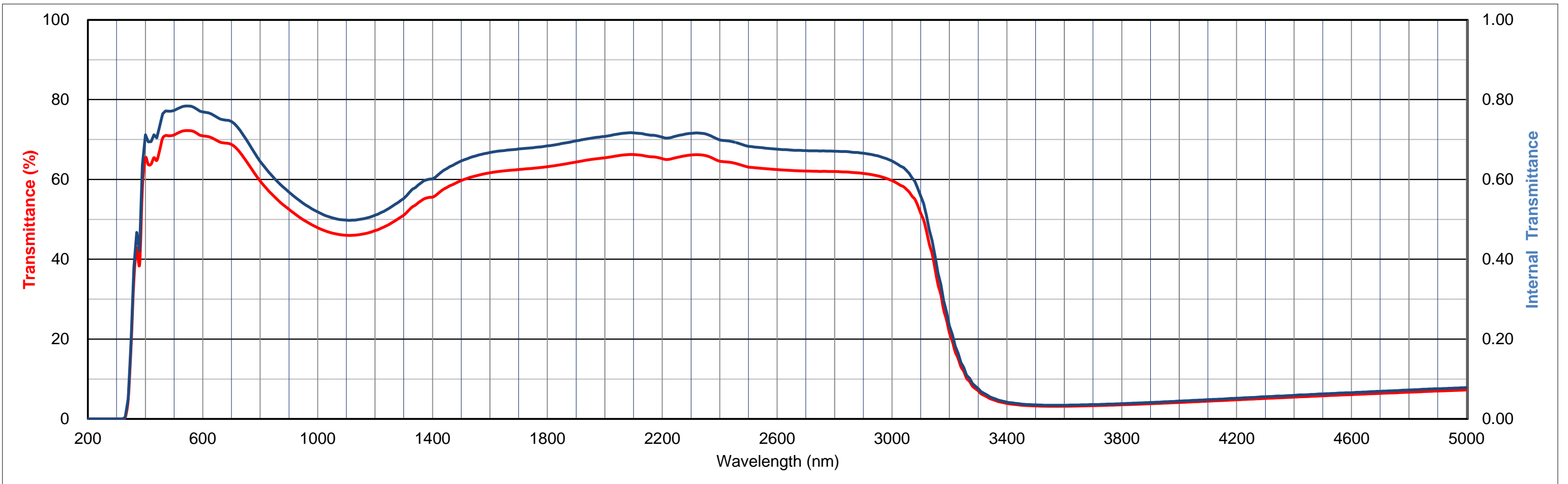
HOYA CANDEO OPTRONICS CORPORATION

Thickness (2.1) mm

ND70

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	0.3	4.6	17.7	34.8	42.9	38.7	58.4
λnm	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590
T	65.4	63.8	63.8	65.4	64.8	67.4	70.3	71.0	70.9	71.0	71.2	71.5	71.9	72.1	72.2	72.2	72.2	72.0	71.5	71.1
λnm	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790
T	70.9	70.8	70.7	70.5	70.1	69.7	69.4	69.2	69.1	69.0	68.8	68.3	67.6	66.7	65.8	64.8	63.7	62.6	61.6	60.5
λnm	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990
T	59.6	58.7	57.9	57.1	56.3	55.6	54.9	54.2	53.7	53.1	52.5	51.9	51.4	50.9	50.4	49.9	49.5	49.0	48.6	48.3
λnm	1000	1010	1020	1030	1040	1050	1060	1070	1080	1090	1100	1110	1120	1130	1140	1150	1160	1170	1180	1190
T	47.9	47.6	47.3	47.0	46.8	46.6	46.4	46.3	46.1	46.1	46.0	46.0	46.0	46.0	46.1	46.2	46.4	46.5	46.7	46.9
λnm	1200	1210	1220	1230	1240	1250	1260	1270	1280	1290	1300	1310	1320	1330	1340	1350	1360	1370	1380	1390
T	47.2	47.4	47.7	48.1	48.4	48.8	49.2	49.6	50.1	50.6	51.1	51.7	52.5	53.1	53.5	54.1	54.6	55.1	55.4	55.5
λnm	1400	1410	1420	1430	1440	1450	1460	1470	1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580	1590
T	55.6	55.9	56.5	57.1	57.6	58.0	58.4	58.7	59.1	59.4	59.7	60.0	60.2	60.5	60.7	60.9	61.1	61.2	61.4	61.5
λnm	1600	1610	1620	1630	1640	1650	1660	1670	1680	1690	1700	1710	1720	1730	1740	1750	1760	1770	1780	1790
T	61.7	61.8	61.9	62.0	62.1	62.2	62.2	62.3	62.4	62.4	62.5	62.5	62.6	62.7	62.7	62.8	62.9	62.9	63.0	63.1
λnm	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990
T	63.2	63.3	63.4	63.5	63.6	63.7	63.9	64.0	64.1	64.2	64.4	64.5	64.6	64.8	64.9	65.0	65.1	65.2	65.3	65.3
λnm	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950
T	65.4	66.0	66.2	65.8	65.2	65.5	66.1	66.0	64.6	64.1	63.1	62.8	62.5	62.3	62.1	62.0	62.0	61.8	61.5	60.9
λnm	3000	3050	3100	3150	3200	3250	3300	3350	3400	3450	3500	3550	3600	3650	3700	3750	3800	3850	3900	3950
T	59.7	57.6	51.5	37.5	21.5	11.9	7.1	4.9	3.9	3.4	3.2	3.2	3.2	3.2	3.3	3.4	3.5	3.7	3.8	4.0
λnm	4000	4050	4100	4150	4200	4250	4300	4350	4400	4450	4500	4550	4600	4650	4700	4750	4800	4850	4900	4950
T	4.1	4.3	4.5	4.6	4.8	5.0	5.1	5.3	5.5	5.6	5.8	5.9	6.1	6.2	6.4	6.5	6.7	6.8	7.0	7.1
λnm	5000																			
T	7.3																			



All data is mean values of various melts.

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