



Lighting Plate

LED Lighting Cover
Conventional Sign Board Cover



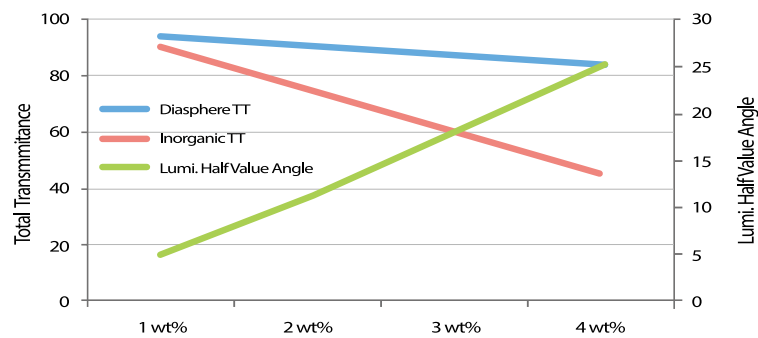
Characteristic of Diasphere[®] for Lighting Plate

Functions

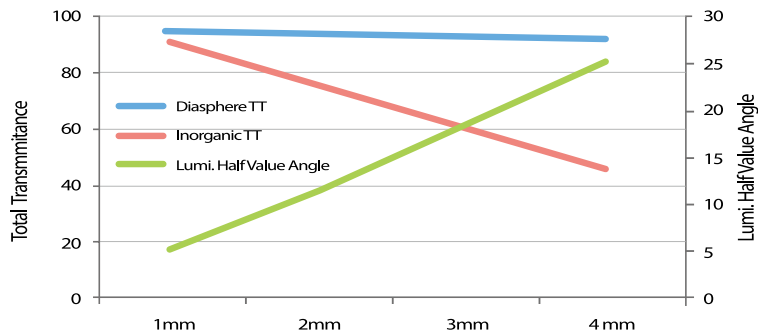
- Excellent diffusion effect with higher transmittance : over 85 % transmittance and haze can be obtained at the same time
- Much higher output ratio of incident light compared to inorganics
- Much lower impact strength depression compared to inorganics : cost and energy saving, flexibility for choosing matrix resin

Applications

- Light diffusing agent for diffusing plate of LCD and lighting cover of LED
- Optical properties on concentration



- Optical properties on thickness



- Optical Properties of PC Diffusing Plate with MH-10FD and TiO₂

Sample	Optical Properties			
	Haze	TT	DF	PT
MH-10FD 0.5%	64.26	87.95	56.52	31.43
MH-10FD 1.0%	85.75	85.59	73.39	12.20
TiO ₂ 0.02%	18.50	91.40	15.60	75.80
TiO ₂ 0.5%	84.20	60.60	51.10	9.50

• TT : Total Transmittance(PT+DF), DF : Diffusion, PT : Parallel Transmittance

• Haze = DF/TT×100

• 2 mm Sheet

Characteristic of Diasphere[®] for Lighting Plate

Optical Properties of Diffusing Plate with KS-200C in PC Matrix

KS-200C, PC Matrix

0.5%	Hz	TT	DF	PT	1.0%	Hz	TT	DF	PT
1.0 T	98.77	74.82	73.90	0.92	1.0 T	99.63	63.65	63.41	0.24
1.5 T	99.48	65.21	64.87	0.34	1.5 T	99.70	56.72	56.55	0.17
2.0 T	99.59	58.93	58.69	0.24	2.0 T	99.73	52.09	51.95	0.14
2.5 T	99.65	53.57	53.38	0.19	2.5 T	99.73	48.37	48.24	0.13
3.0 T	99.68	49.59	49.43	0.16	3.0 T	99.71	45.33	45.20	0.13
1.5%	Hz	TT	DF	PT	2.0%	Hz	TT	DF	PT
1.0 T	99.71	57.79	57.62	0.17	1.0 T	99.73	54.76	54.61	0.15
1.5 T	99.73	52.68	52.54	0.14	1.5 T	99.74	49.32	49.19	0.13
2.0 T	99.73	48.67	48.54	0.13	2.0 T	99.73	44.92	44.80	0.12
2.5 T	99.73	44.99	44.87	0.12	2.5 T	99.75	40.25	40.15	0.10
3.0 T	99.71	41.72	41.60	0.12	3.0 T	99.73	37.34	37.24	0.10

* Measure optical properties using NDH5000 ISO mode

Optical Properties of Diffusing Plate with MH-5FHD in PC Matrix

MH-5FHD, PC Matrix

0.5%	Hz	TT	DF	PT	1.0%	Hz	TT	DF	PT
1.0 T	95.50	87.02	83.10	0.92	1.0 T	97.20	87.94	85.48	2.46
1.5 T	97.56	84.68	82.61	2.07	1.5 T	98.60	83.82	82.65	0.17
2.0 T	98.76	78.74	77.76	0.98	2.0 T	99.08	78.92	78.19	0.73
2.5 T	99.15	73.78	73.15	0.63	2.5 T	99.31	73.54	73.03	0.51
3.0 T	98.97	76.63	75.84	0.79	3.0 T	99.41	68.24	67.84	0.40
1.5%	Hz	TT	DF	PT	2.0%	Hz	TT	DF	PT
1.0 T	98.72	84.13	83.05	1.08	1.0 T	99.27	78.23	77.66	0.57
1.5 T	99.29	76.19	75.65	0.54	1.5 T	99.54	68.88	68.56	0.32
2.0 T	99.45	69.59	69.21	0.38	2.0 T	99.61	62.10	61.86	0.24
2.5 T	99.56	63.49	63.21	0.28	2.5 T	99.66	55.48	55.29	0.19
3.0 T	99.60	58.05	57.82	0.23	3.0 T	99.67	51.79	51.62	0.17

* Measure optical properties using NDH5000 ISO mode

Characteristic of Diasphere® for Lighting Plate

Optical Properties of Diffusing Plate with the mixture of KS-200C and MH-5FHD in PC Matrix

KS200C 0.5%+5FHD 0.25%

0.5%	Hz	TT	DF	PT
1.0 T	98.45	77.96	76.75	1.21
1.5 T	99.28	69.89	69.39	0.50
2.0 T	99.52	62.71	62.41	0.30
2.5 T	99.60	57.31	57.08	0.23
3.0 T	99.64	52.97	52.78	0.19

KS200C 0.5%+5FHD 0.5%

0.5%	Hz	TT	DF	PT
1.0 T	98.76	77.44	76.48	0.96
1.5 T	99.41	68.25	67.85	0.40
2.0 T	99.56	61.46	61.19	0.27
2.5 T	99.64	56.12	55.92	0.20
3.0 T	99.67	51.57	51.40	0.17

KS200C 0.5%+5FHD 0.75%

0.5%	Hz	TT	DF	PT
1.0 T	99.01	76.38	75.62	0.76
1.5 T	99.45	67.56	67.19	0.37
2.0 T	99.59	60.56	60.31	0.25
2.5 T	99.66	55.27	55.08	0.19
3.0 T	99.67	50.95	50.78	0.17

KS200C 1.0%+5FHD 0.25%

0.5%	Hz	TT	DF	PT
1.0 T	99.53	68.07	67.75	0.32
1.5 T	99.66	59.64	59.44	0.20
2.0 T	99.70	54.13	53.97	0.16
2.5 T	99.72	50.31	50.17	0.14
3.0 T	99.72	46.93	46.80	0.13

KS200C 1.0%+5FHD 0.5%

0.5%	Hz	TT	DF	PT
1.0 T	99.54	67.74	67.43	0.31
1.5 T	99.66	59.20	59.00	0.20
2.0 T	99.72	53.69	53.54	0.15
2.5 T	99.72	49.85	49.71	0.14
3.0 T	99.72	46.55	46.42	0.13

KS200C 1.0%+5FHD 0.75%

0.5%	Hz	TT	DF	PT
1.0 T	99.61	66.11	65.85	0.26
1.5 T	99.69	57.89	57.71	0.18
2.0 T	99.70	53.07	52.91	0.16
2.5 T	99.72	49.29	49.15	0.14
3.0 T	99.72	45.81	45.68	0.13

KS200C 1.5%+5FHD 0.25%

0.5%	Hz	TT	DF	PT
1.0 T	99.67	61.39	61.19	0.20
1.5 T	99.73	54.84	54.69	0.15
2.0 T	99.72	50.88	50.74	0.14
2.5 T	99.75	47.20	47.08	0.12
3.0 T	99.73	44.15	44.03	0.12

KS200C 1.5%+5FHD 0.5%

0.5%	Hz	TT	DF	PT
1.0 T	99.70	60.69	60.51	0.18
1.5 T	99.72	54.44	54.29	0.15
2.0 T	99.74	50.50	50.37	0.13
2.5 T	99.74	46.80	46.68	0.12
3.0 T	99.73	43.74	43.62	0.12

* Measure optical properties using NDH5000 ISO mode

Characteristic of Diasphere® for Lighting Plate

Optical Properties of Diffusing Plate with KS-200C and MH-5FHD in PS Matrix

KS-200C

0.5%	Hz	TT	DF	PT	1.0%	Hz	TT	DF	PT
1.0 T	97.66	80.93	79.04	1.89	1.0 T	99.41	72.47	72.04	0.43
1.5 T	99.17	71.95	71.35	0.60	1.5 T	99.64	63.40	63.17	0.23
2.0 T	99.45	66.00	65.64	0.36	2.0 T	99.71	57.77	57.60	0.17
2.5 T	99.56	59.34	59.08	0.26	2.5 T	99.72	53.02	52.87	0.15
3.0 T	99.64	56.01	55.81	0.20	3.0 T	99.74	49.93	49.80	0.13
1.5%	Hz	TT	DF	PT	2.0%	Hz	TT	DF	PT
1.0 T	99.64	66.39	66.15	0.24	1.0 T	99.71	61.56	61.38	0.18
1.5 T	99.72	69.67	59.50	0.17	1.5 T	99.75	56.64	56.50	0.14
2.0 T	99.75	55.05	54.91	0.14	2.0 T	99.74	52.87	52.73	0.14
2.5 T	99.75	51.44	51.31	0.13	2.5 T	99.74	49.68	49.55	0.13
3.0 T	99.73	48.72	48.59	0.13	3.0 T	99.74	46.79	46.67	0.12

MH-5FHD

0.5%	Hz	TT	DF	PT	1.0%	Hz	TT	DF	PT
1.0 T	90.18	89.75	80.94	8.81	1.0 T	96.97	88.53	85.85	2.68
1.5 T	95.29	87.92	83.78	4.14	1.5 T	98.48	84.27	82.99	1.28
2.0 T	97.32	85.35	83.06	2.29	2.0 T	99.03	79.65	78.88	0.77
2.5 T	98.22	82.39	80.92	1.47	2.5 T	99.28	74.54	74.00	0.54
3.0 T	98.97	75.89	75.11	0.78	3.0 T	99.43	68.87	68.48	0.39
1.5%	Hz	TT	DF	PT	2.0%	Hz	TT	DF	PT
1.0 T	98.36	86.04	84.63	1.41	1.0 T	98.93	82.97	82.08	0.89
1.5 T	99.13	79.30	78.61	0.69	1.5 T	99.38	74.27	73.81	0.46
2.0 T	99.37	73.30	72.84	0.46	2.0 T	99.54	67.30	66.99	0.31
2.5 T	99.49	66.91	66.57	0.34	2.5 T	99.61	61.40	61.16	0.24
3.0 T	99.57	60.94	60.68	0.26	3.0 T	99.63	56.44	56.23	0.21

KS-200C+MH-5FHD 50/50 Mixture

0.5%	Hz	TT	DF	PT	1.0%	Hz	TT	DF	PT
1.0 T	94.95	86.69	82.31	4.38	1.0 T	98.93	78.50	77.66	0.84
1.5 T	97.95	81.28	79.61	1.67	1.5 T	99.44	70.03	69.64	0.39
2.0 T	98.84	76.52	75.63	0.89	2.0 T	99.62	62.62	62.38	0.24
2.5 T	99.23	71.16	70.61	0.55	2.5 T	99.65	57.38	57.18	0.20
3.0 T	99.40	66.42	66.02	0.40	3.0 T	99.68	53.11	52.94	0.17
1.5%	Hz	TT	DF	PT	2.0%	Hz	TT	DF	PT
1.0 T	99.53	70.40	70.07	0.33	1.0 T	99.63	67.16	66.91	0.25
1.5 T	99.67	62.70	62.49	0.21	1.5 T	99.72	59.64	59.47	0.17
2.0 T	99.72	56.96	56.80	0.16	2.0 T	99.73	54.79	54.64	0.15
2.5 T	99.74	53.08	52.94	0.14	2.5 T	99.75	51.42	51.29	0.13
3.0 T	99.74	49.36	49.23	0.13	3.0 T	99.73	48.81	48.68	0.13

• Measure optical properties using NDH5000 ISO mode

Characteristic of
Diasphere[®]
for Lighting Plate

Optical Properties of Diffusing Plate with KS-200C in PMMA Matrix

KS-200C, PMMA Matrix

0.5%	Hz	TT	DF	PT	1.0%	Hz	TT	DF	PT
1.0 T	92.81	93.15	86.45	6.70	1.0 T	97.91	91.39	89.48	1.91
1.5 T	96.42	92.49	89.18	3.81	1.5 T	98.76	87.77	86.68	1.09
2.0 T	97.62	91.34	89.17	2.17	2.0 T	99.18	82.43	81.75	0.68
2.5 T	98.18	89.93	88.29	1.64	2.5 T	99.31	78.17	77.63	0.54
3.0 T	98.69	87.08	85.94	1.14	3.0 T	99.44	73.24	72.83	0.41
1.5%	Hz	TT	DF	PT	2.0%	Hz	TT	DF	PT
1.0 T	98.77	88.44	87.35	1.09	1.0 T	99.15	85.00	84.28	0.72
1.5 T	99.25	81.84	81.23	0.61	1.5 T	99.49	74.51	74.13	0.38
2.0 T	99.45	74.84	74.43	0.41	2.0 T	99.59	68.32	68.04	0.28
2.5 T	99.54	69.45	69.13	0.32	2.5 T	99.63	64.01	63.44	0.24
3.0 T	99.59	63.52	63.26	0.26	3.0 T	99.65	59.19	58.98	0.21

* Measure optical properties using NDH5000 ISO mode