

Polarizer

Content

Category of Polarizer for LCD.....	2
Component of Products.....	2
Additional Function of Polarizer.....	3
Linear Polarizer.....	3
Surface Treatment on Polarizer Surface.....	5
Elliptical Polarizer.....	5
Others.....	6
Optical Properties.....	8

Category of Polarizer for LCD

■ Iodine Type Polarizer:

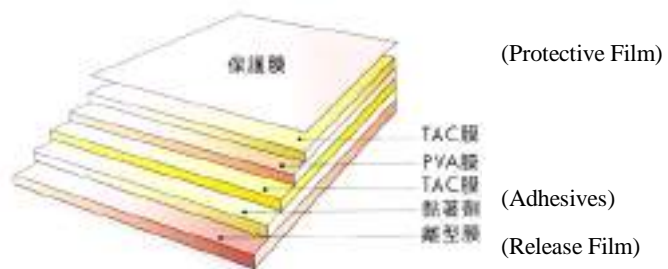
Neutral Gray
Paper White
Thin & Light
Surface Treatment
Super Wide View

■ Dye Type Polarizer:

High Durability--Neutral Gray
Color Polarizer--Purple
--Red

Component of Products

■ Structure of Polarizer:



■ Transmissive Type:

Protective Film
Polarizer
Adhesives
Release Film

■ Reflective/Transflective Type:

Reflector or Transflector
Adhesives
Polarizer
Adhesives
Release Film

Additional Function of Polarizer

■ Surface Treatment of Polarizers:

HC (Hard Coat)
AGV(Anti-Glare& Hard Coat), low haze
AGV1(Anti-Glare& Hard Coat), high haze
AGV2(Anti-Glare& Hard Coat), middle haze
AGV3(Anti-Glare& Hard Coat), high resolution

■ Transflective /Reflective Type:

Reflector --WR, Aluminum Reflector(Hairline)
-- WNA, Aluminum Reflector(non-Hairline)
Transflector--STHC, STMA(Transflector)
--GDB(Ag Transflector)

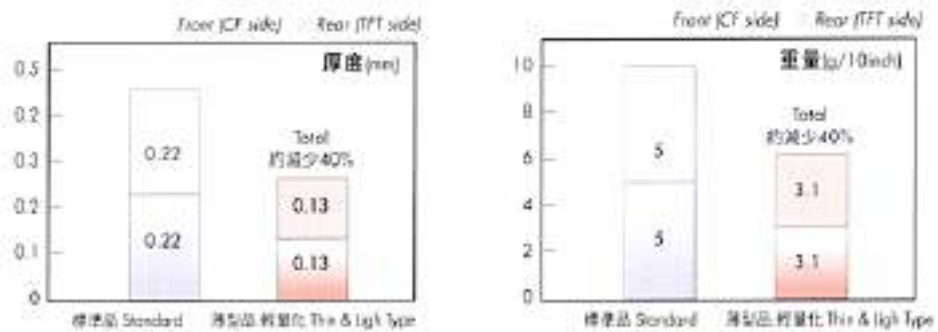
Linear Polarizer

■ Thin Type Polarizer

* Comparison of Structure of Standard and Thin Type Polarizers:

Polarizer	Polarizer
LCD Cell	LCD Cell
Polarizer	Polarizer
Standard Type	Thin Type

* Comparison to Standard Type:



* Respective film thickness of various combinations in thin type polarizer (u m)

	Without AG		With AG	
	Polarizer (TAC x 2 + PVA Film)	180	100	188
Effective area (Polarizer + Adhesives)	208	128	216	133
Total thickness (Effective area + Protecting Film)	258	178	266	183

■ Paper White Polarizer

* Usage and Structure:

Paper White Polarizer	Release Film
Glass	Adhesives
Liquid Crystal	Paper White Polarizer
Glass	Diffuse Adhesives
Paper White Polarizer	Ag Film
Reflection Plate or Transflector	Protective Film

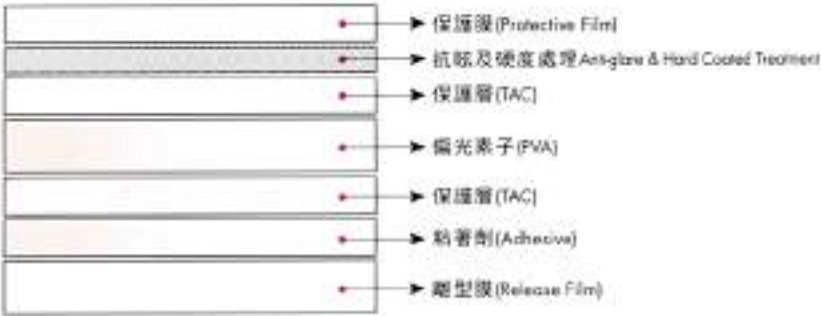
■ Transflective/Reflective Type:

* Transflective/Reflective Type:

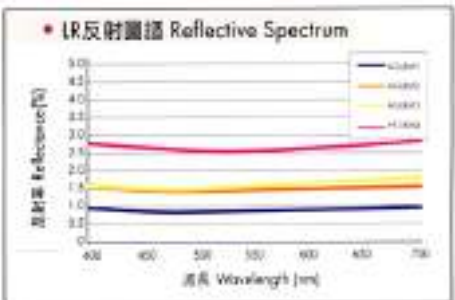
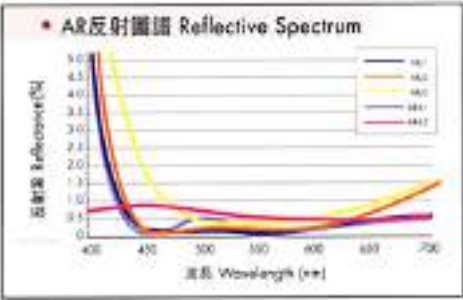
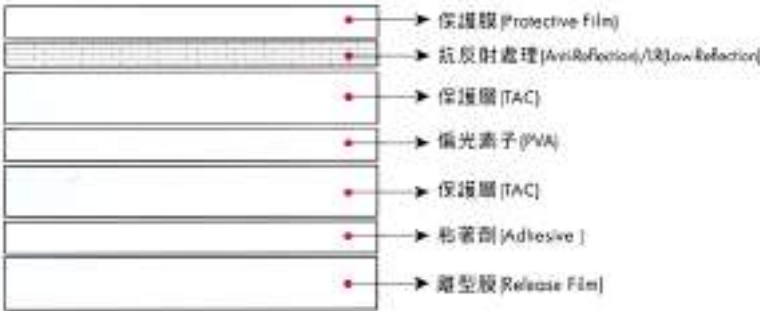
Reflector or Transflector
Adhesives
Polarizer
Adhesives
Release Film

Surface Treatment on Polarizer Surface

Anti-glare and Hard Coated Treatment



AR(Anti-Reflection)/LR(Low-Reflection) Treatment



Elliptical Polarizer

Structure: One Retardation Layer

Two Retardation Layers

Protective Film	Protective Film
Polarizer	Polarizer
Adhesives	Adhesives
Retardation Film	Retardation Film
Adhesives	Adhesives
Release Film	Retardation Film
	Adhesives
	Release Film

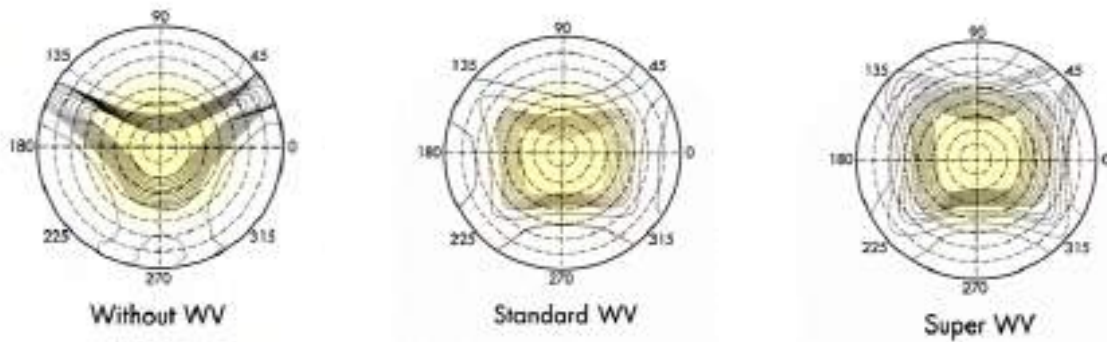
Others

Wide Viewing Angle Polarizer

* Structure & Application

Structure	Application
Protective Film	LPT Type
TAC	TFT-LCD Panel
PVA	LPT Type
Wide View Film	
Adhesives	
Release Film	

* Viewing Angle Characteristics

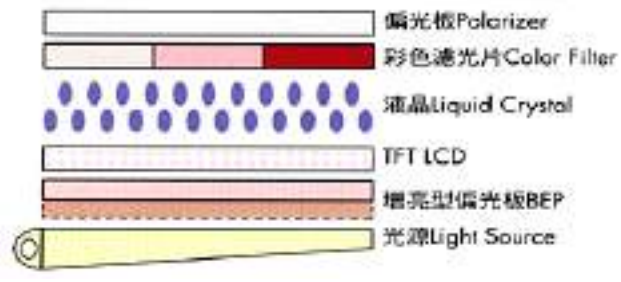


	Left	Right	Upper	Lower
W/O Compensation Film	45	45	45	15
Standard WV (03)	60	60	60	30
Super WV (12)	80	80	80	45

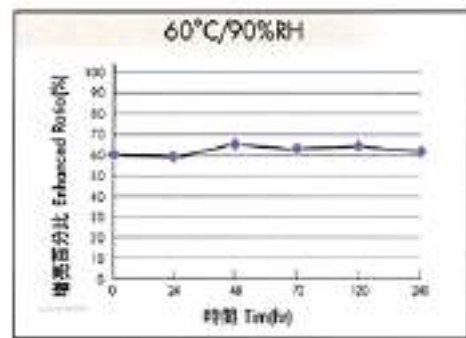
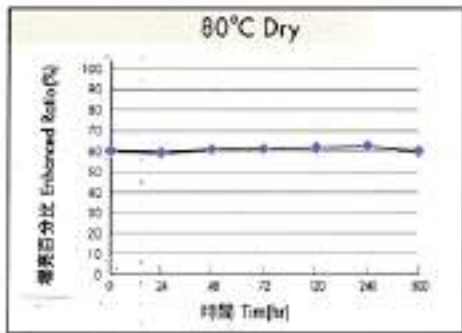
Brightness Enhancement Polarizer

* Structure & Application

● 使用方法 Application:

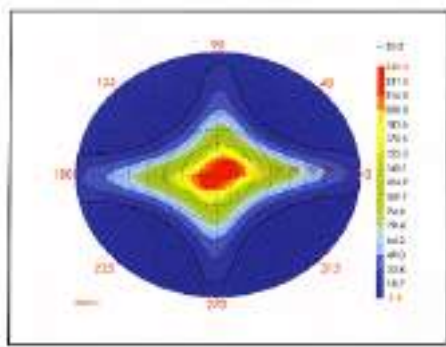


* Durability of Brightness Enhancement Polarizer

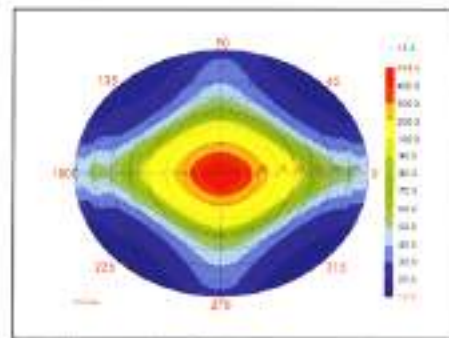


● Polarizer for VA Mode LCD

* Viewing Angle Characteristics



無補償膜 VA Mode without the Compensation Film



有補償膜 VA Mode with the Compensation Film

* Range of Compensation Film

Range of Retardation value R(nm)	Range of Z-Direction Retardation value Rth(nm)
30-45	120-150

Optical Properties

Transmissive Type

Category	Model NO.	Color	Transmittance			Polarizing Co-Efficiency	Hue					
			Single	Parallel	Crossed		Single		Parallel		Crossed	
							a	b	a	b	a	b
Standard	TP001	Neutral Gray	44.3	38.1	1.4090	96.565	-1.6	-0.6	-2.4	3.9	-2.6	-15.8
High Contrast	TP002	Neutral Gray	42.3	35.3	0.0091	99.974	-2.0	3.3	-3.4	5.7	0.8	-3.5
	TP003	Neutral Gray	44.2	38.2	1.1602	97.007	-1.2	1.7	-1.9	4.4	-1.9	-7.5
Super High Contrast	TP004	Neutral Gray	43.4	37.7	0.0078	99.979	-1.3	3.0	-2.1	5.3	0.1	-1.7
	TP005	Neutral Gray	43.0	38.4	0.115	99.950	-1.3	3.1	-2.3	4.6	0.0	-6.5
Paper White Polarizer	TP006	Neutral Gray	43.8	38.4	0.152	99.598	-0.6	-0.9	-2.1	0.3	12.6	-35.12
	TP007	Neutral Gray	43.4	27.8	0.09	99.75	1.5	-6.4	-0.40	-0.8	17.8	-59.14
Ultra Super High Contrast	TP008	Neutral Gray	43.7	39.1	0.0098	99.945	-1.2	3.1	-2.1	6.0	0.0	-0.9
	TP009	Neutral Gray	43.7	39.1	0.0098	99.945	-1.2	3.1	-2.1	6.0	0.0	-0.9
Wide View	TP010	Neutral Gray	42.8	36.1	0.005	99.95	-1.6	3.6	-2.75	6.8	-0.0	-0.3
	TP011	Neutral Gray	43.1	36.5	0.011	99.92	-1.5	3.3	-2.74	6.1	0.31	-0.7
SUPER Wide View	TP012	Neutral Gray	42.8	36.1	0.005	99.95	-1.6	3.6	-2.75	6.8	-0.0	-0.3
	TP013	Neutral Gray	43.1	36.5	0.011	99.92	-1.5	3.3	-2.74	6.1	0.31	-0.7
High Durability	TP014	Neutral Gray	38.1	28.1	1.1977	95.824	0.5	-1.5	-0.9	4.4	10.1	-36.6

	TP015	Neutral Gray	41.4	31.4	3.1877	90.316	0.2	-3.1	-0.1	3.4	2.3	-31.0
Color	TP016	Purple	49.4	37.8	13.1143	69.632	14.9	-25.2				
	TP017	Bluish Purple	48.8	37.5	11.4741	72.883	3.1	-21.9				

Reflective/Transflective Type

Category	Model NO.	Color	Transmittance			Polarizing Co-Efficiency	Hue						Transflection	
			Single	Parallel	Crossed		Single		Parallel		Crossed		Transmittance	Reflectance
							a	b	a	b	a	b		
Standard	TP018	Neutral Gray	44.3	38.1	1.4090	96.565	-1.6	-0.6	-2.4	3.9	-2.6	-15.8	-	36.3
High Reflectance	TP019	Neutral Gray	44.3	38.1	1.4090	96.565	-1.6	-0.6	-2.4	3.9	-2.6	-15.8	20±3.5	60
	TP020	Neutral Gray	43.0	38.4	0.115	99.950	-1.3	3.1	-2.3	4.6	0.0	-6.5	20±3.5	60
High Reflectance	TP021	Neutral Gray	42.3	35.3	0.0091	99.974	-2.0	3.3	-3.4	5.7	0.8	-3.5	15	60
	TP022	Neutral Gray	43.0	38.4	0.115	99.950	-1.3	3.1	-2.3	4.6	0.0	-6.5	15	60
Middle Reflectance	TP023	Neutral Gray	44.3	38.1	1.4090	96.565	-1.6	-0.6	-2.4	3.9	-2.6	-15.8	40	45
	TP024	Neutral Gray	43.0	38.4	0.115	99.950	-1.3	3.1	-2.3	4.6	0.0	-6.5	40	45
Middle Reflectance	TP025	Neutral Gray	44.3	38.1	1.4090	96.565	-1.6	-0.6	-2.4	3.9	-2.6	-15.8	35	55
	TP026	Neutral Gray	43.0	38.4	0.115	99.950	-1.3	3.1	-2.3	4.6	0.0	-6.5	35	55
Middle Reflectance	TP027	Neutral Gray	42.3	35.3	0.0091	99.974	-2.0	3.3	-3.4	5.7	0.8	-3.5	40	45
	TP028	Neutral Gray	43.0	38.4	0.115	99.950	-1.3	3.1	-2.3	4.6	0.0	-6.5	40	45

Middle Reflectance	TPO29	Neutral Gray	42.3	35.3	0.0091	99.974	-2.0	3.3	-3.4	5.7	0.8	-3.5	35±3.5	50
	TPO30	Neutral Gray	43.0	38.4	0.115	99.950	-1.3	3.1	-2.3	4.6	0.0	-6.5	35±3.5	50
	TPO31	Neutral Gray	44.2	38.2	1.1602	97.007	-1.2	1.7	-1.9	4.4	-1.9	-7.5	35±3.5	50
Low Reflectance	TPO32	Neutral Gray	44.2	38.2	1.1602	97.007	-1.2	1.7	-1.9	4.4	-1.9	-7.5	50	35
	TPO33	Neutral Gray	43.0	38.4	0.115	99.950	-1.3	3.1	-2.3	4.6	0.0	-6.5	50	35
High Reflectance	TPO34	Neutral Gray	43.8	38.4	0.152	99.598	-0.6	-0.9	-2.1	0.3	12.6	-35.12	2	30
	TPO35	Neutral Gray	43.4	27.8	0.09	99.75	1.5	-6.4	-0.40	-0.8	17.8	-59.14	2	30
	TPO36	Neutral Gray	43.4	27.8	0.09	99.75	1.5	-6.4	-0.40	-0.8	17.8	-59.14	2	30
Anti-Glare	TPO37	Neutral Gray	42.45	35.49	0.03	99.93	-1.57	3.35	-2.63	5.93	0.10	-1.05	-	-
	TPO38	Neutral Gray	42.46	35.83	0.03	99.95	-1.49	3.25	-2.45	5.55	-0.09	-0.66	-	-
	TPO39	Neutral Gray	42.15	35.45	0.02	99.90	-1.76	3.96	-2.92	7.02	0.18	-1.29	-	-
	TPO40	Neutral Gray	42.43	35.66	0.03	99.97	-1.27	2.44	-2.18	-1.00	-1.30	2.32	-	-
	TPO41	Neutral Gray	42.64	36.06	0.03	99.96	-1.30	2.32	-2.14	4.15	0.31	-2.55	-	-
	TPO42	Neutral Gray	42.22	35.30	0.01	99.98	-1.26	2.32	-2.05	3.95	0.3	-3.01	-	-
	TPO43	Neutral Gray	42.55	36.02	0.03	99.97	-1.39	3.18	-2.27	5.52	-0.09	-0.41	-	-
	TPO44	Neutral Gray	42.77	36.58	0.014	99.96	-1.31	3.01	-2.15	5.31	-0.20	-0.67	-	-