



ITO FILM PROPERTIES				
Property	Item	Specification	Unit	Condition
Optical	Total Luminous Transmittance	≥ 86	%	Haze Meter (JIS-K-7105)
	Haze (Anti-Glare)	8 ± 2	%	Haze Meter (JIS-K-7105)
	Haze (Clear)	≤ 3	%	JIS K6714
	Index of Refraction	1.6		ASTM D542
Mechanical	Top Hardcoat Hardness	≥ 3	H	JIS-K-5400
	Tensile Strength (MD)	215	MPa	JIS C2151
	Elongation (MD)	170	%	JIS C2151
	Young ks Modulus	4	GPa	ASTM D882
	Tear Strength	220/20	N/mm	JIS C2151
Electrical	Dielectric Breakdown Voltage	300	KV/mm	JIS C2151
	Permittivity 1KHz / 1MHz	3.3 / 3.2		JIS C2151
	Dissipation Factor 1KHz / 1MHz	0.20 / 1.00	%	JIS C2151
	Specific Contact Resistance	10 ¹⁷	Ω/cm	JIS C2151
	PET FILM Surface Resistance	10 ¹⁷	Ω/cm	JIS K6911
	ITO Resistance	520 ± 120	Ω/sq.	4-Point Probe Tester
Physical	Density	1.40	g/cm ³	JIS K6760
	Melting Point	260	°C	JIS K7121
	Usable Temperature Range	-70 ~ +180	°C	
	Absorption	0.40	%	Federal Test Method Std. No. 406
	Humidity Coefficient	1.2 × 10 ⁻⁵	cm/cm/%RH	
	Thermal Coefficient	1.5 × 10 ⁻⁵	cm/cm/°C	ASTM D696
	Thermal Shrinkage (MD / TD)	≤ 0.1 / ≤ 0.1	%	150°C×30min, JIS C2151
	Gas Permeability: Water Vapor	6.9	g/m ² /24hr/0.1mm	JIS Z0208
Gas Permeability: O2	19	cc(NTP)/m ² /24hr/0.1mm/atm	ASTM D1434	

HARDCOAT CHEMICAL RESISTANCE			
Chemical	Condition	Cross-Cut Test	Appearance
None		100 / 100	OK
Boiling Water	15 min.	100 / 100	OK
5% NaOH	30 min.	100 / 100	OK
2.5% HNO	1 hr.	100 / 100	OK
100% Acetone	1 hr.	100 / 100	OK
100% Toulene	1 hr.	100 / 100	OK
2% Ammonia	1 hr.	100 / 100	OK
5% H ₂ SO ₄	2 hrs.	100 / 100	OK
2.5% HCl	10 hrs.	100 / 100	OK
50% Ethanol	10 hrs.	100 / 100	OK
50% Methanol	10 hrs.	100 / 100	OK
3% NaCl		100 / 100	OK