


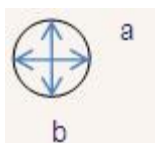
ITO Conductive PET Film

Application	Structure
<ul style="list-style-type: none"> – Touch screens components – Electroluminescent (EL) lamps – Transparent Heating Elements – Electrophoretic displays – Sensors position – Liquid crystal devices – Membrane Switches – EMI shielding – Smart windows 	Transparent Electroconductive Film  ITO (Indium – Tin Oxide) PET Film 125μm (+/-5)

Item	Unit	EMI-ITO 60	Test Method
Thickness	μm	125μm (+/-5)	Micrometer
Width	mm	297mm (+/-2)	Measurement Tape
Length	mm	210mm(+/-2)	Measurement Tape
Base Film Quality			
Transmittance	%	≤86	ASTM D1003
Haze	%	1.5 (+/-1)	ASTM D1003
Thermal	MD %	≤1.2	JIS C2318:1997
Shrinkage	TD %	≤1.2	JIS C2318:1997
Hard Coat Hardness	H	–	JIS K5400
Specification			
Surface Resistance	Ω/sq.	60 (+/-5)	4cmx4cm, 3 point average
ITO Coated Thickness	1,400±150Å		Parallel Elctrode
Transmittance	%	≥ 80~81	ASTM D1003 (550nm)
Haze	%	1.5 (+/-1)	ASTM D1003
ITO Adhesion	%	100 / 100	Cross cut test JIS K5400
Thermal	MD %	≤1.2	JIS C2318:1997
Shrinkage	TD %	≤1.2	150°Cx30min.
Environmental Character			
High Temperature Test	R/Ro	1.0 (+/-0.25)	150°Cx60min.
High Temperature Storage	R/Ro	1.0 (+/-0.25)	80°Cx250hrs

High Temperature Moisture	R/Ro	1.0 (+/-0.25)	60°Cx95%RH x 250hrs	
Chemical Character				
Ethanol	R/Ro	1.0 (+/-0.25)	R.T 30 min	
Acetone	R/Ro	1.0 (+/-0.25)	R.T 30 min	
Toluene	R/Ro	1.0 (+/-0.25)	R.T 30 min	
SAppearance				
Scratch / Linear Defects				
Method	Size	Length	Spec.	Remark
Visual Inspection	W > 0.05mm	L > 2mm	NG	In case scratch / smudge are more
	0.02 < W≤0.05mm	L≤2mm	≤20	than 2, distance between the ²
	W≤0.02mm		OK	should not be less than 10mm/m ²
Particle, Bubble, Smudge				
Method	Size	Length	Spec.	Remark
Visual Inspection	0.3mm < Ø	–	NG	Not exceed m ² < spot, (black>
	0.2mm < Ø ≤0.3mm	–	≤10	spot, sparkling spot, ITO coating
	Ø ≤ 0.2mm	–	OK	peeling off.
Visual Inspection			Dimp, Dent, Hole	

Particle size $\emptyset = (a + b) / 2$



Electrical Uniformity

All products feature electrical uniformity of 10% within any one square foot area, defined as the maximum difference from the average ohms per square value within that area. However, touch screen manufacturers typically achieve < 1% resistance linearity by orienting their sensors (busbars) so that the electrical current path is always in the direction of the length of the film roll.

Handling

Vacuum deposited ITO coatings are very thin and are easily scratched or cracked if handled improperly. When removing film from a roll, care should be taken not to bend or crease it. It is important never to allow the ITO coated side to come in contact with a surface, such as a table, during processing operations. Sliding ITO coating over a surface will scratch the coating, resulting in elevated surface resistance and visible defects. Please note that all ITO PET film product supplied in sheet form is supplied with protective liner on all surfaces.

