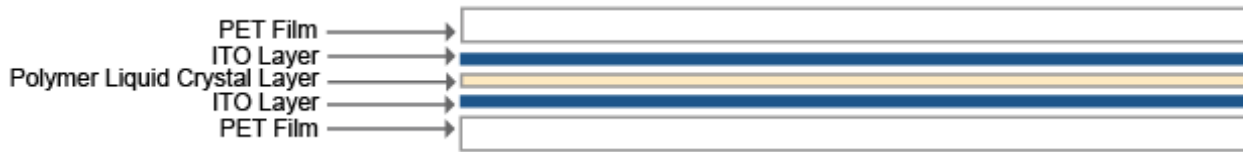


LCD Film Preparation

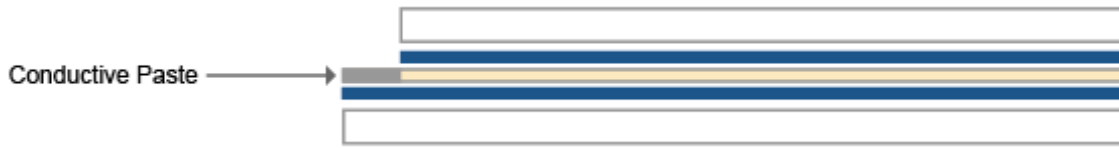
LCD Film Cross-Section

LCD Film consists of 5 Layers:



Conductive Paste Application

Before applying the conductive paste, a segment of the PET Film and ITO Layer is removed ready to clean the top polymer liquid crystal layer. When complete, a layer of conductive paste is spread along the length of the cleaned surface.



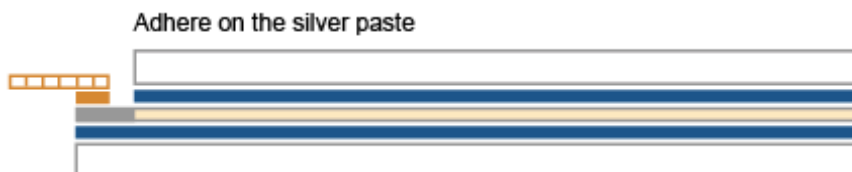
Bus Bar Cross-Section

The Bus bar consists of copper mesh and copper tape welded together.



Bus Bar Application

The Bus bar is applied to the conductive area of the polymer liquid crystal layer.



LCD Film

Max size : 980mm x 3000mm

Electrical wire (radius = 1.5mm)

Connected to the copper mesh on bus bar.

Bus bar (8mm)

ITO surface / silver paste / copper tape / copper mesh.
Bus bar is applied to one edge less than 1500mm.

Clear band on bus bar edge (11mm)

Required on all panels regardless of size.
Should be hidden and protected by plastic edge frame.

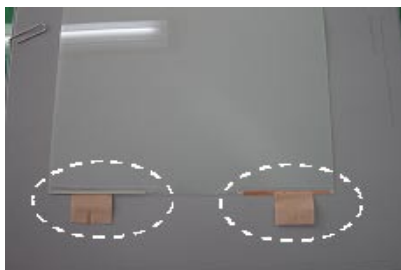
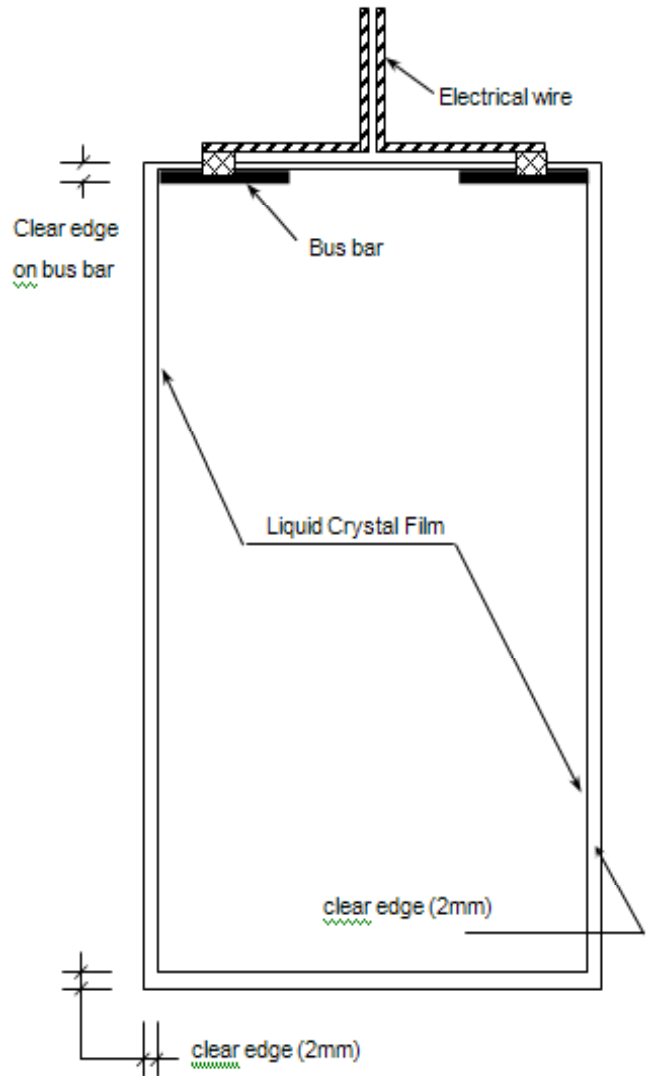
Clear band on three edges (2mm)

Required on all panels regardless of size.
Plastic edge framing is optional.

LCD Film

Please note that the sheets of LCD Film do not have any UV protection. We recommend that if the LCD Film is applied directly to a window which is exposed to UV, then a solar film is used to protect the LCD.

LCD Film with Bus Bar



LCD Film Lamination Process

The lamination process of LCD Film is almost same as that of standard laminate glass. However, some process parameters such as temperature, pressure and time should be different in considering the thermo-mechanical properties of the LCD Film. Enclosed are the details required for the lamination process and the process parameters for test lamination at your factory. Please note that our process parameters can vary slightly and be different to those in your process because of the differences in the method and equipment used. Pro Display adopts a flat lamination process in an auto clamp (bagging method).

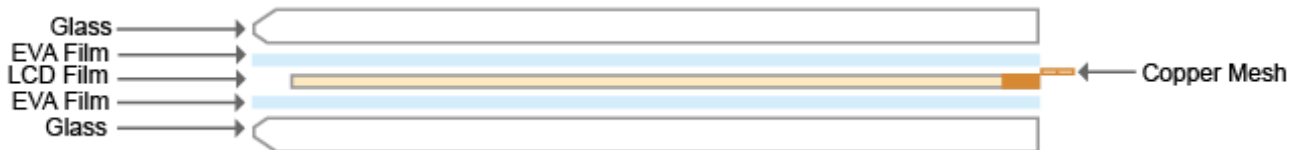
1 - Glass loading

2 - Glass washing, drying & inspection

3 - Cut EVA film

4 - Assembling

- Keep the surface of glass, EVA Film and LCD Film clean. Do not touch the LCD Film with bare hands.
- Place the glass, EVA Film, LCD Film, EVA film and glass one by one.
- Keep the copper mesh of LCD Film outside the edge of the glass.
- Carefully handle the LCD Film, the copper tape and mesh tags can be easily detached from LCD Film.



5 - Pre-lamination

** Vacuum Process

- Temperature : 120 ~ 130°C (Sekisui EVA film).
- (A little high temperature for Bridgestone & Toso EVA film).
- Processing Time: 40 ~50 Min.

If you find Microscopic air bubbles inside (Size: below 5mm), you have to Autoclave lamination.

6 - Autoclave

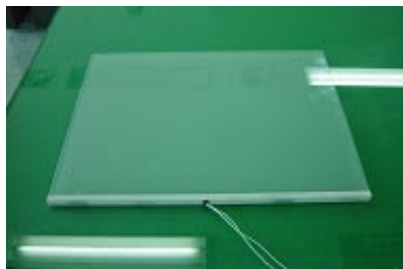
** Process parameter

- Temperature : 120~130°C
- Pressure : 3 ~ 5 kg/cm²
- Time : 40min

7 - Wiring and edge framing work



[Wiring work after autoclave]



[Edge framing work]



8 - Warranty

Please note that the wholesale sheets of LCD Film are supplied with a 2 year warranty. All wholesale sheets must be checked and inspected on delivery and any defects must be recorded in writing within 7 days of receipt of goods. The warranty includes defects in the sheets and performance of the polymer liquid crystal over the 2 year term. It must be noted that manufacturing process of the wholesale LCD sheets means that the PET surfaces can be exposed to very minor surface scratching which is not covered by the warranty. There may also be very slight variations in the thickness of the liquid crystal over the surface area during the coating process; this is not classed as a fault.

Exclusions (LCD Film panels should be tested prior to lamination):

1. Incorrect manufacture of the bus-bar or damaged cause to the bus-bar.
2. Any faults caused during the lamination process.
3. Shrinkage and damage to the LCD caused by using acid based silicon sealants.
4. Damage caused during cutting the LCD Film or surface scratches to the surface area during preparation.
5. Damage incurred through poor storage of the LCD Film.
6. Damage caused by applying the wrong voltage or fluctuation (must be 110 VAC).
7. Damage to the LCD caused by not sealing or installing the glass correctly.