Step-by-Step LCD Manufacturing Process

Samsung Public Information Display (PID) is the global market leader in panel solution technology. Samsung PID is recognized for its exceptional product performance and reliability, shipping nearly 8 million PID panels since 2009. If you were to line up all these LCD screens, the height would amount to 1,000 times that of the world’s highest mountain – Mount Everest! We have achieved market recognition due to our advanced research and development, state-of-the-art manufacturing processes, and unmatched quality assurance procedures.

Designed to tolerate long hours of continuous operation, Samsung Display’s panels perform through high temperatures, ambient light, dust, and heavy-duty usage. Our panels use proprietary Thin Film Transistors (TFTs) employ VA technology where liquid crystals are vertically aligned, to create the highest quality PID displays available on the market. For a refresher on LCD components and structure, see this article.

Such rigorous qualifications begin on Samsung Display’s manufacturing floor where our unique construction process and eco-friendly materials ensure compliance with ROHS and deliver unparalleled benefits such as:

- Outstanding brightness and color uniformity
- 24/7 operation – 2 years and more
- Low power consumption
- High contrast ratio
- Resistance to extreme weather conditions

See how the LCD manufacturing process works in detail with this step-by-step infographic.
Public Information Display

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**Thin Film Transistor Application**

1. **Source creation**
   - Source for the transistor is created using the source substrate.
2. **Crystallization**
   - Crystallization of the source is performed to create the transistor structure.
3. **Source metal deposition**
   - Metal is deposited on the source to form the transistor layers.
4. **Source drive in**
   - Drive in of the source material is performed to ensure good conductivity.
5. **Source anneal**
   - Annealing of the source is carried out to improve its properties.

**Printing, Liquid Crystal Injection, and Glass Assembly**

1. **Substrate clean**
   - Cleanliness of the substrate is ensured to prevent any contamination.
2. **Substrate alignment**
   - Alignment of the substrate is performed to ensure precise positioning.
3. **Substrate injection**
   - Liquid crystal is injected into the substrate to create the display layer.
4. **Substrate curing**
   - Curing of the liquid crystal is performed to solidify it.
5. **Substrate testing**
   - Testing of the substrate is carried out to ensure its functionality.

**Critical Last Components to Packaging and Shipment**

1. **Critical component assembly**
   - Critical components are assembled to form the final display unit.
2. **Critical component testing**
   - Testing of the critical components is performed to ensure their reliability.
3. **Critical component packaging**
   - Packaging of the critical components is carried out to protect them.
4. **Critical component labeling**
   - Labeling of the critical components is performed for identification purposes.
5. **Critical component shipping**
   - Shipping of the critical components is organized for delivery.

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