# Activity 3 | Glass Displays

Corning has played a leading role in display technology for nearly 80 years! Read the timeline to understand how the display industry—and the glass technologies to support it—has changed over time.

The 1939 World's Fair showcased a futuristic technology: television. The TV included a circular cathode ray tube made by Corning.

By the 1950s, Corning was producing television glass for the black-and-white sets that were appearing in nearly every living room.

In 1964, Corning invented the fusion overflow process, which forms specialty glass in midair.

In the 1980s, the fusion process revolutionized the way LCD glass is manufactured, making thin, flat glass with exceptional stability and unparalleled surface quality.

Today's vivid, immersive displays rely on layers of Corning glass technologies to provide thinner, more energy efficient devices with richer resolutions.

## LCD vs. OLED

Corning delivers glass innovations for Liquid-Crystal Display (LCD) as well as rigid and flexible Organic Light-Emitting Diode (OLED) panels. In an LCD, an always-on backlight projects light through a liquid crystal, sandwiched between two pieces of glass. When the liquid crystal is excited by an electrical current, it lets the light of individual pixels pass through like a shutter, and the pixels create a picture. An OLED display works by turning on and off millions of tiny individual LEDs, each forming the individual pixels of a picture. Thanks to Corning's display technologies, LCD and OLED display panels both excel at delivering vibrant consumer displays, each in its own unique way—learn more about the differences here: corning.com/worldwide/en/markets/Display-Market/lcd-vs-oled-a-glass-age-debate.html.

## Part 1: One Material, Many Layers

Advanced glass displays— for televisions, information kiosks, handheld devices, and more—are everywhere in our daily lives. Both LCD and newer OLED screens are comprised of several layers of glass to achieve the interactivity and imagery we rely on. Read about these layers below, then label the layers in the diagrams to get a more complete sense of how important glass is for enhancing our entertainment experiences. For an interactive view, check out corning.com/glassstack. Then, continue to learn more about Corning's technology for OLED with this video: youtube.com/watch?v=YQJuskDyRGk&feature=youtu.be.

### LCD

A. Cover Glass – helps protect the device
B. Front plane – houses the color filter to create the picture
C. Backplane – processes millions of thin-film transistors
D. Backlight or Light-guide plate – directs light out the front of edge-lit LCD TVs

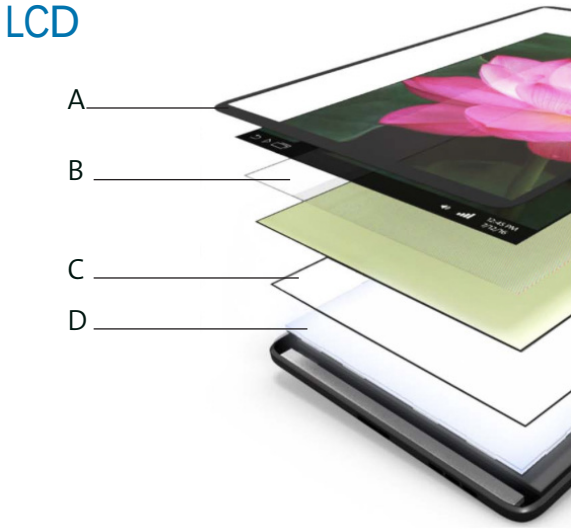
### OLED

A. Cover Glass – helps protect the device
B. Encapsulation Glass – helps prevent damaging moisture and oxygen reaching the electronics
C. Backplane with OLED – processes millions of thin-film transistors

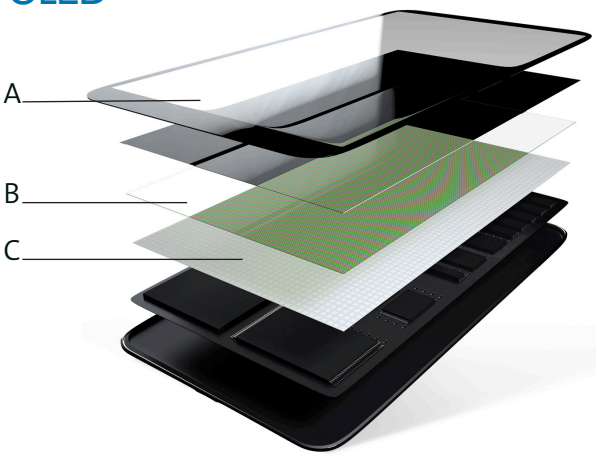
## Part 2: Fusion

Corning's fusion manufacturing process is at the core of its display innovations, producing glass that is smooth, flat, thin, and stable. Catch the process in action atyoutu.be/q4ZU7zUxdM8. As you watch, think about the many variables that determine the final product: the quality of the raw materials; the temperature of the vat; the evenness and speed at which the molten glass spills over; and the handling of the newly formed glass sheets.

### LCD




### OLED




## MY LIFE IN THE GLASS AGE

Learn more about Corning's advanced display glass technologies at LifeInTheGlassAge.com. Choose one of the Corning display products shown in the video. Learn how glass is involved and identify how glass is enabling that product or experience. You can write your thoughts on the back of this sheet.



Check out **LifeInTheGlassAge.com** to discover more.