Inorganic Chemistry

Chemical educator and *Compound Interest* blogger Andy Brunning examines the materials that give phone screens strength, color, and touch sensitivity

MORE ONLINE

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To download a PDF of this article, visit cenm.ag/smartphone-screen.

What are phone screens made from?

PERIODIC GRAPHICS

Touch screens on our devices are commonplace, and phones with foldable displays are becoming more popular. Here we look at the materials behind the screens' strength, colors, and touch sensitivity.

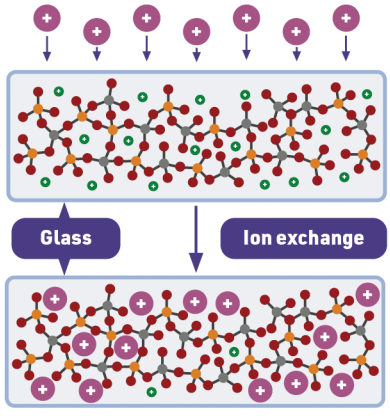
Screen glass

Phone screens are made from aluminosilicate glass chemically strengthened by an ion-exchange process. Some manufacturers add ceramic nanocrystals to make the glass even stronger.



Screen colors

Phones use small amounts of rare earth elements to produce colors on the screen. Older phones have liquid crystal displays (LCDs). Newer phones use organic light-emitting diodes (OLEDs).



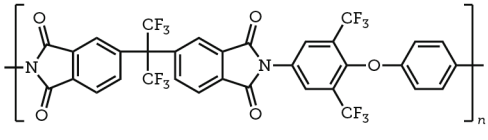
- Aluminum
- Silicon
- Oxygen
- Sodium ion
- Potassium ion

Eu^{3+} **Red** Europium(III)

Tb^{3+} **Green** Terbium(III)

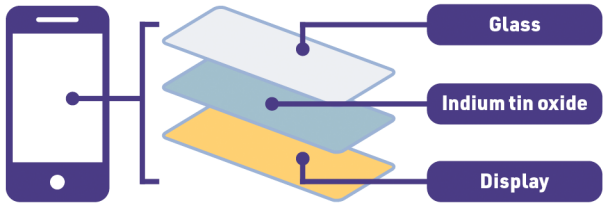
Eu^{2+} **Blue** Europium(II)

Foldable displays use ultrathin glass covered with a protective polymer film, usually a colorless polyimide (CPI) or polyethylene terephthalate (PET).



How touch screens work

The surface of the screen is covered with a layer of electrically conducting indium tin oxide, which creates an electrostatic field. When your finger touches the screen, it disrupts this field, and the phone's software can measure this electrical change and determine the location of your finger on the screen.



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