

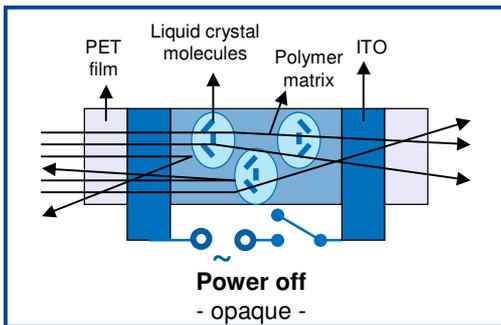
LC SmartGlass™

Applications

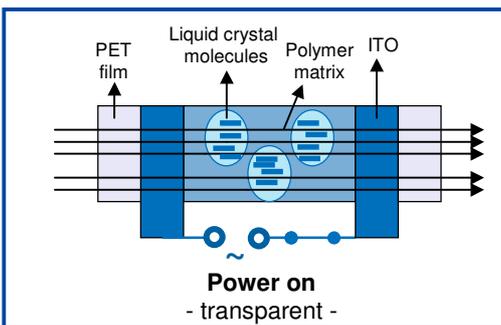
Enjoy your privacy at the press of a button! Activating the on/off-switch turns the opaque LC SmartGlass™ into a transparent LC SmartGlass™. LC SmartGlass™ offers architects and planners creative design options (screens, energy-saving windows, bath / shower partitions, privacy screens, overhead lighting, and many other ideas, as well). It is also suited for use in technical applications, like projection displays, for instance.

Technology

When turned off, the liquid crystal molecules assume random positions so that they scatter incident light and the LC SmartGlass™ becomes non-transparent (opaque).



When turned on, the liquid crystal molecules align and the LC SmartGlass™ turns transparent.



Production

The previously known technology based on liquid crystal molecules has been in use already for years with digital watches and computer monitors. The liquid crystal film (LC film) is sandwiched between two films that are used to laminate the glass panels. The LC film consists of a polymer matrix that is embedded between two polyester films with an electroconductive coating. When voltage is applied, the liquid crystal molecules become aligned and the LC film turns transparent. If the power is turned off, the liquid crystals assume a “disordered condition”. This causes the LC film to change from being transparent to opaque (non-transparent).



Glass substrates for manufacturing LC SmartGlass™

Float glasses:
standard clear float glass,
white glass (extra clear low iron float glass),
etc.

Special glasses:
the anti-reflective glass AMIRAN®, radiation
shielding glass RD 50®, colored glasses
ARTISTA® and IMERA, fire resistant glass
PYRAN®, color effect glass NARIMA®, etc.

Processing possibilities

Insulation glass, tempered safety glass,
curved, with holes drilled, bullet-resistant, etc.

Dimensions / Thickness

Float glasses as glass substrates:
max. 986 mm x 2,800 mm

Special glasses as glass substrates:
upon request
Thickness: depends on the glass substrate

Electrical connections

Driving voltage: 110 V AC; 50 Hz to 60 Hz

Current: approx. < 0.2 A/m²

Power: approx. 3.5 W/m²

Switching time

Approx. 1/100 second at room temperature

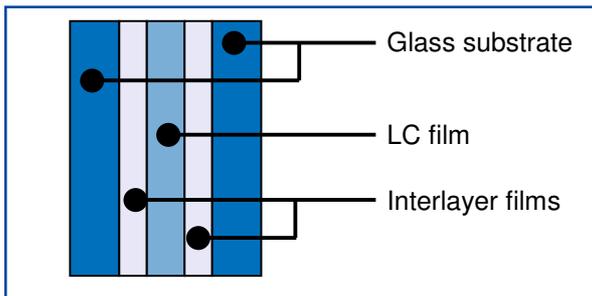
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LC SmartGlass™

Production (continued)

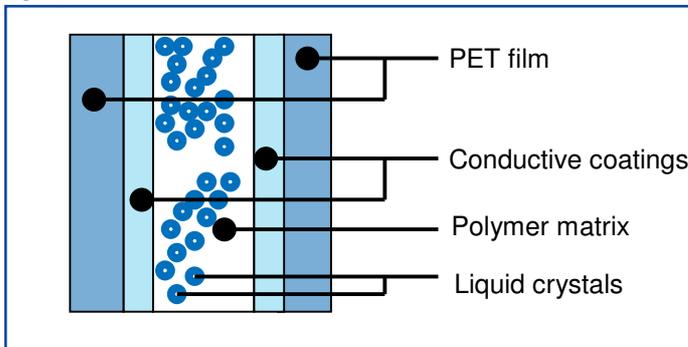
The LC film is embedded between two films that hold the LC film in position. The glass panels are laminated together with these foils, as is usually the case in manufacturing laminated glass. The glass panels are generally 4 mm to 5 mm thick (depending on the glass substrate).

LC glass:



The liquid crystal film consists of a polymer matrix with liquid crystal molecules. This polymer matrix is embedded between two polyester films that feature an electroconductive coating. The LC film is connected to a transformer with a cable.

LC film:



Optical properties

Light transmission:
approx. 75 % in a transparent state
approx. 67 % in an opaque state
(With float glass as the substrate)

Angle of view: approx. 120°
(In this range, no significant change in transparency can be detected while viewing the transparent pane from the side.)

Life-span

> 10 years

Advanced Materials

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