



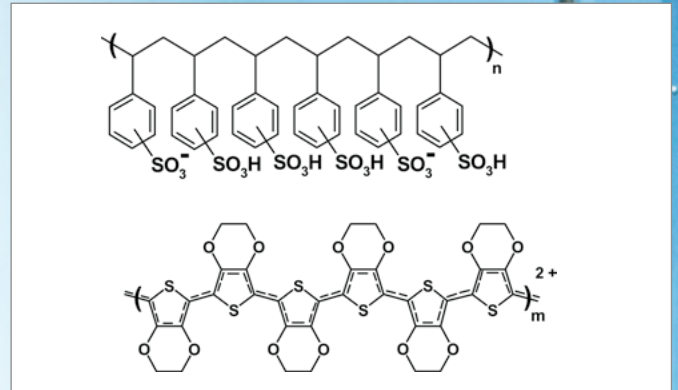
**Innovate with Clevios®**  
PEDOT Conductive Polymers

# Innovate with Clevios®

## PEDOT Conductive Polymers

The use of intrinsically conductive polymers is rapidly developing. Marketed under the name of Clevios® this groundbreaking 3,4-polyethylene-dioxythiophene based product range is set to continue its success story.

Clevios® PEDOT/PSS is a class leader in the field of conductive chemistry. New kinds of flexible displays, high performance electrolytic capacitors, antistatic and conductive protective and shielding layers, OLED, OPV and printed electronics are just a few of the many possible applications for Clevios®.



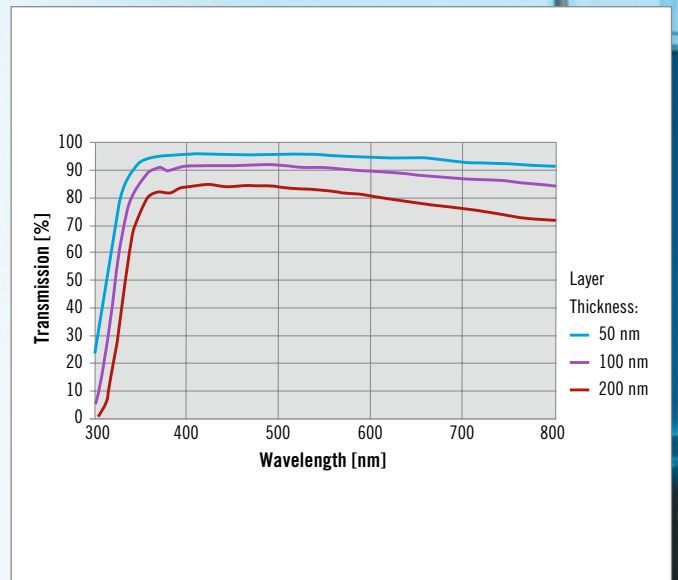
### Key Characteristics

#### Film

- Conductivity tunable over wide range
- Transparent and clear
- Excellent mechanical flexibility
- High thermal and chemical stability

#### Dispersion

- Aqueous dispersions
- Safe handling
- Easy to use by coating and printing
- Tailored product range
- Manufactured on industrial scale



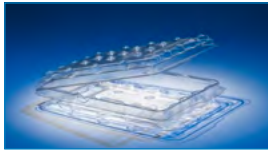
### Clevios® Conductivity / Resistivity Range

10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>	10 <sup>4</sup>	S/cm
1E10	1E9	1E8	1E7	1E6	1E5	1E4	1000	100	10	Ω/□

### Application Methods

- Screen Printing
- Inkjet Printing
- Gravure Printing
- Slot-Die Coating
- Spray Coating
- Dip Coating
- Spin Coating

# Areas of Application



## Antistatic coatings of plastic and glass

Clevios® provides transparent, antistatic, and dissipative properties to avoid static charges that can cause dust attraction, and damage by electro-static

discharge (ESD). Uses include packaging trays, protective / release films, instrument housings etc.



## Printed Capacitive Touch Keys, Sliders and Switches

Transparent sensor electrodes are screen-printed using Clevios® and are widely used in HMI

(human machine interfaces) of whiteware and automotive.



## Capacitors

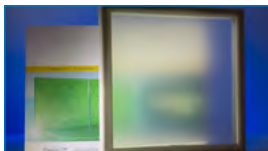
Clevios®, used as cathode material, has revolutionized the performance of electrolytic capacitors.



## OLED Lighting / OLED Displays

Clevios® is used in organic light emitting diodes as hole-injection layer (HIL) in OLED displays, and as transparent electrode layer

with excellent planarization properties on metal-mesh and -nanowires in OLED lighting.



## Smartwindows

Coatings of highly conductive Clevios® on PET film or glass act as the transparent electrodes in smartwindows to

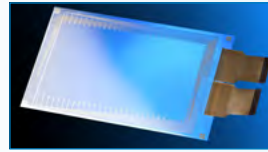
switch the PDLC (polymerdispersed liquid crystal) layer by applying an electric field.



## Smart textiles and wearable electronics

Low impedance skin contact makes Clevios® ideally suited for biometric sensing and electric

muscle stimulation electrodes. Coated on textiles, Clevios® provides flexible electrodes for many applications.



## Capacitive Touch Panels

Transparent touch sensors for displays can be made with Clevios® coated films.

Patterning of the sensors is done by the Clevios® Etch technology. The unique flexible properties of Clevios® enable the next-generation flexible and foldable touch displays.



## 3D conformal touch sensitive surfaces

The excellent flexible properties of Clevios® electrodes enable 3D-shaped touch sensitive

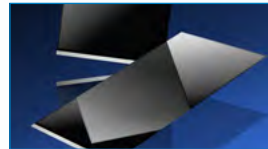
surfaces by thermoforming or back-injection molding to realize new HMI designs.



## Organic Solar Cells

Clevios® Solar grades are used as hole transport layer (HTL) and transparent top electrode.

Solvent-based types are under development for perovskite solar cells.



## LCD Shielding

Clevios® coatings on display glass can be used in IPS LCD for ESD and EMI shielding.



## Electroluminescence (EL)

Clevios® is used for screen printing of transparent electrodes in thick-film electroluminescence.

Its flexible properties enable new uses on paper or fabric substrates for smart packagings and wearables.



## Electrochromic displays (ECD)

Clevios® can be printed and used as the electrochromic layer and electrode in electrochromic displays.

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