

## OTech T - High Performance Inks for Transparent Electrodes Data Sheet

### Product description

OrelTech's unique process allows printing and aerosol spraying of transparent conductive silver thin films. Printed layers undergo short development (curing) using plasma treatment resulting in a fine silver structure. OrelTech inks do not contain nanoparticles and are significantly environmentally friendlier than the alternatives on the market. Lack of nanoparticles also allows them to be much more cost-effective than other conductive inks.

### Benefits

- Coating and patterning by inkjet, slot-die or aerosol printing
- Low temperature process
- Printed on polymers, glasses and active materials
- Very flexible (up to 50,000 bends)
- No solid or liquid waste
- Environmentally friendly
- Cost-efficient solution



OrelTech silver transparent electrode on PET

### Typical properties of the ink

OTech T	
Viscosity, cP	10 – 60
Shelf life, 25°C	12 month
Cure type	Cold plasma
Application method	Aerosol spray, inkjet, slot-die
Substrate	Plastic, glass, active materials
Appearance	Clear liquid
Applications	<ul style="list-style-type: none"> <li>● OLEDs</li> <li>● Solar cells</li> <li>● Displays</li> <li>● Touchscreens</li> <li>● Transistors</li> <li>● Other sensitive devices</li> </ul>



## Directions for use and storage

- **Storage:** Inks can be stored in closed containers for up to 12 month in dry, dark conditions.
- **Clean-up:** Materials can be cleaned up using alcohols and ketones, preferably isopropanol.
- **Pre-treatment:** In some cases, to ensure better wettability and/or adhesion, the substrate material must be pre-treated prior to ink application.

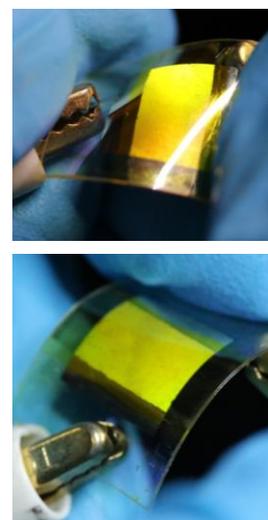
## Curing conditions

- **Curing time:** 1-5 minutes.
- **Curing apparatus:** Cold plasma instrument with a low pressure chamber.
- **Curing temperature:** Temperature in the plasma chamber does not exceed 70 °C. No additional heating is needed. That temperature can be lowered to room temperature using a temperature-controlled plasma chamber.

## Typical properties of the cured film

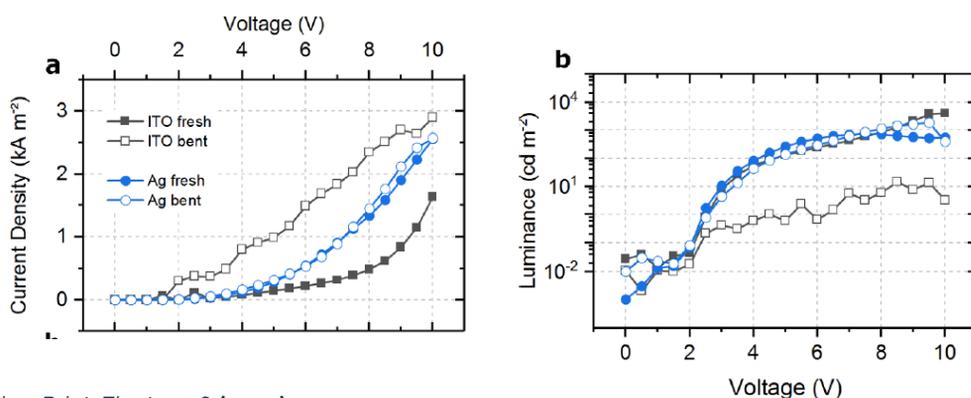
OTech T	OTech T 80	OTech T 60
Transmission	≥ 85%	≥ 65%
Conductivity	≤ 50 Ω/□	≤ 3 Ω/□
Adhesion (on PET)	ISO/JIS class 1*	
Printability	Inkjet, aerosol, slot-die	
Flexibility	≥ 50,000 cycles	
Thickness	30-50 nm	
Applications	OLEDs, touchscreens, photovoltaics, ITO replacement	

\* - 95% or more of the material remain on the PET after the test



Flexible OLED device based on OTech T

## Publications



M Hengge et al, *Flex. Print. Electron.* 6 (2021) 015009

F Hermerschmidt et al, Proceedings Volume 11808, *Organic and Hybrid Light Emitting Materials and Devices XXV*; 118080B (2021)

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