

## OTech Aero - Silver Ink for Highly Conductive Electrodes Data Sheet

### Product description

OrelTech's unique process allows printing and aerosol spraying of highly conductive silver thin films. Printed layers undergo short development (curing) using plasma treatment resulting in a thin 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 aerosol spraying
- Low temperature process
- Sprayed on polymers, glasses, metals and active materials – any form or shape
- No solid or liquid waste
- Environmentally friendly
- Cost-efficient solution

### Typical properties of the ink

OTech Aero	
Viscosity, cP	10 – 30
Shelf life, 25°C	12 month
Cure type	Cold plasma
Application method	Aerosol
Substrate	Plastic, glass, 3D objects
Coverage, cm <sup>2</sup> /gr	2500
Appearance	Clear liquid
Applications	<ul style="list-style-type: none"> <li>● EMI shielding</li> <li>● Radio frequency (RF)</li> <li>● Wireless components</li> <li>● Memory</li> <li>● Sensors</li> <li>● Other sensitive devices</li> </ul>



## Directions for use and storage

- **Storage:** The inks can be stored in closed containers for up to 12 month in dry, dark conditions. No need for refrigeration or inert atmosphere.
- **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 inside 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

Conductivity, % bulk	30 – 55
Resistivity, $\mu\Omega\cdot\text{cm}$	5.6 – 2.9
Sheet resistance, $\Omega/\square$	0.1 – 3
Adhesion	Tested on ABS, PET, PI, PEEK, others
Layer thickness, nm	200 – 1500



OrelTech silver layer on 3D printed ABS



OrelTech silver layer on 3D printed PLA