

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



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

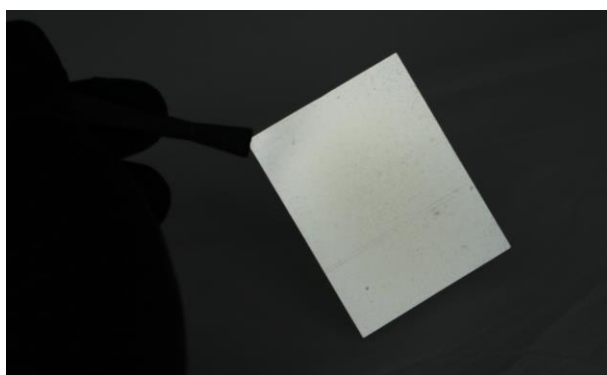
- **Curing time:** 1-5 minutes.
- **Curing apparatus:** Cold plasma instrument with a low pressure chamber.
- **Curing temperature:** Temperature in the plasma chamber does not exceed 70 °C. No additional heating is needed. That temperature can be lowered to room temperature using a temperature-controlled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

Typical properties of the cured film

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



OrelTech silver electrode on 3D printed ABS



OrelTech silver electrode on PET