OTech Jet - 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

- Precise patterning by inkjet or aerosol jet printing
- Low temperature process
- Printed on polymers, glasses, metals and active materials
- No solid or liquid waste
- Environmentally friendly
- Cost-efficient solution

Typical properties of the ink

OTech Jet	
Viscosity, cP	5 – 30*
Shelf life, 25°C	12 month
Cure type	Cold plasma
Application method	Inkjet, aerosol jet
Example print heads	KM 512, Samba, Xaar, Epson DX5, single nozzle
Substrate	Plastic, paper, glass, PV stack
Appearance	Clear liquid
Applications	• EMI shielding • Radio frequency (RF) • Wireless components • Memory • Sensors • Other sensitive devices
* Depending on the application method. Custom formulations are available.	

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.

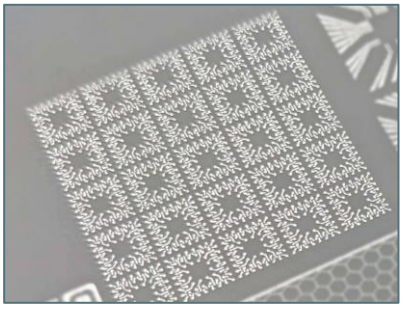
Curing conditions

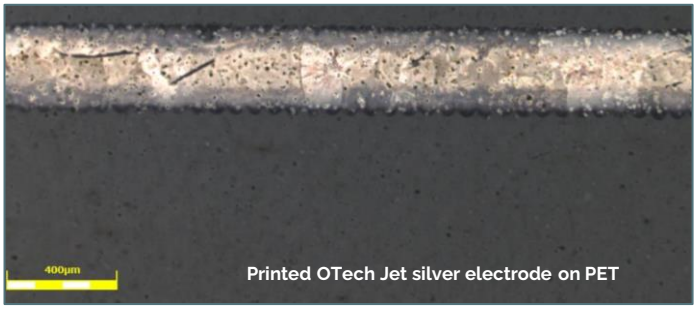
- **Curing time**: 1-5 minutes.
- **Curing apparatus**: Cold plasma instrument with a low-pressure chamber (0.3-0.5 mbar).
- **Curing temperature**: Temperature in the plasma chamber does not exceed 70 ^{o}C. No additional heating is needed. That temperature can be lowered to room temperature using a temperature-controlled plasma chamber.

Typical properties of the cured film

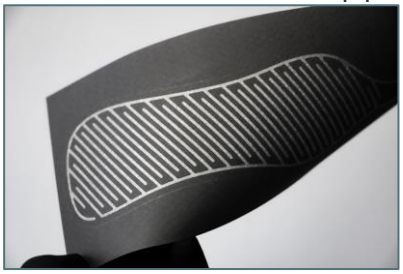
Conductivity, % bulk	30 – 55
Resistivity, μΩ·cm	5.6 – 2.9
Sheet resistance, Ω/□	0.1 – 3
Adhesion	Tested on PET, PI, PC, PEN, others
Layer thickness, nm	100– 1500

Printed OTech Jet silver electrode on PET





Printed OTech Jet silver electrode on paper



Printed OTech Jet silver mirror electrode on PET

Printed OTech Jet silver electrode on textile