

OTech Aurum - Gold Ink for Highly Conductive Electrodes Data Sheet

Product description

OrelTech's unique process allows printing and aerosol spraying of highly conductive gold thin films. Printed layers undergo short development (curing) using plasma treatment resulting in a thin fine pure gold 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, aerosol or slot-die printing
- Low temperature process
- Printed on polymers, metals and fabrics
- **Pure gold layers, no additives, good biocompatibility**
- No solid or liquid waste
- Material saving
- Cost-efficient solution
- **Biocompatible and non-toxic**



Typical properties of the ink

OTech Aurum	
Viscosity, cP	3 – 20*
Shelf life, 25°C	12 month
Cure type	Cold plasma
Application method	Inkjet, slot-die, aerosol
Example printheads	Samba, single nozzle
Substrate	Plastic, paper, glass, fabric
Appearance	Clear yellow liquid
Acidity	pH > 2
Applications	<ul style="list-style-type: none"> • Sensors • Electrodes • Medical devices • Calalysis • Other sensitive devices
* Depending on the application method. Custom formulations are available.	



Directions for use and storage

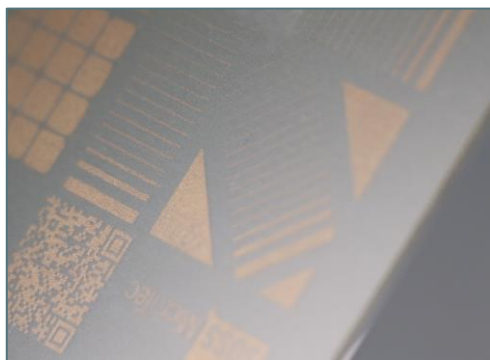
- **Storage:** Inks can be stored in closed containers for up to 12 month in dry, dark conditions.
- **Clean-up:** Materials can be cleaned up using alcohols and ketones, preferably isopropanol.
- **Pre-treatment:** In some cases, to ensure better wettability and/or adhesion, the substrate material must be pre-treated prior to ink application.
- **Handling:** Please note that the **ink is acidic (pH > 2)**. Use gloves and protective goggles, avoid direct skin contact. In some cases (fabric substrates) there is a need to rinse the substrate after the metallization process.

Curing conditions

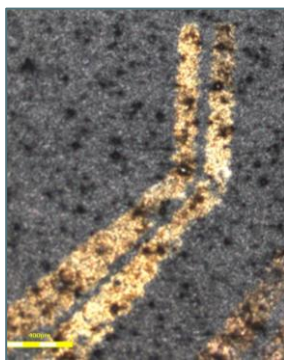
- **Curing time:** 10-15 minutes.
- **Curing apparatus:** Cold plasma instrument with a low-pressure chamber (0.3-0.5 mbar).
- **Curing temperature:** Temperature in the plasma chamber does not exceed 70 °C. No additional heating is needed. That temperature can be lowered to room temperature using a temperature-controlled plasma chamber.

Typical properties of the cured film

Conductivity, % bulk	30 – 45
Sheet resistance, Ω/\square	1 – 3
Adhesion	Tested on PET, paper, fabric, ABS, others
Layer thickness, nm	30 – 1000
Line width, μm	>50
No cytotoxic effect according to ISO 10993	



OTech Aurum gold electrode printed on rough PEI



OTech Aurum gold electrode on fabric