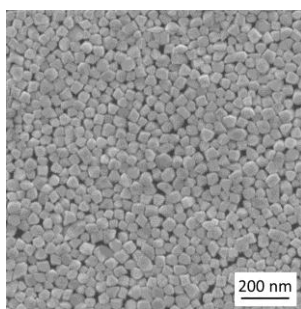


Sinter-free ink concept



Electron micrograph of dried metal nanoparticle ink



DOD-piezo inkjet

SINTER-FREE INKS FOR PRINTED ELECTRONICS

MATERIAL DATA SHEET

GENERAL INFORMATION

The inks are based on metal nanoparticles (gold or silver) modified with conductive polythiophene derivatives. They exhibit good colloidal stability in polar solvents for long periods. Inks with a wide range of physical properties can be formulated to make them suitable in different applications. **Room temperature drying** is sufficient to obtain excellent conductivity without any further treatment. The sinter-free ink is suitable to **inkjet print** electronic structures on **flexible substrates** such as paper, PET, and silicone. International patent number WO 2017 045989 A1.

INK PHYSICAL PROPERTIES

- ▶ Solid content of the ink (w/w) [%]: 10 – 30
- ▶ Particle size [nm]: <100
- ▶ Density [g/mL]: 0.85 – 1.4
- ▶ Viscosity [cP]: 1 – 10
- ▶ Surface tension [mN/m]: 35 – 55



SOLVENT AND DURABILITY

- ▶ Solvent mixtures: water/methanol/ethanol/isopropanol/acetone
- ▶ Shelf life: solvent dependent; 2 weeks – 1 year

MATERIAL PROPERTIES

- ▶ Sintering conditions: no sintering required
- ▶ Resistance: 0.04 – 0.28 [Ω /sq/mil]
 $9.9 \cdot 10^{-7}$ – $7.0 \cdot 10^{-6}$ [Ω m]
 35 – 250 x bulk metal values
- ▶ Processing: inkjet printing, blade coating etc.
- ▶ Suitable substrates: glossy paper/glass/polymer sheets/rubber/ceramics

APPLICATIONS

- ▶ Printed electronics, circuits
- ▶ OPVs
- ▶ OLEDs
- ▶ Sensors

SAMPLING

- ▶ Testing samples are available upon request.



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