

General Information

Sicrys™ P75DB-1, a conductive high viscous ink based on single-crystal **silver nanoparticles** in diethylene glycol butyl ether (DGBE), has been designed for **LIFT (Laser Induced Forward Transfer)** digital printing and laser sintering. The ink offers:

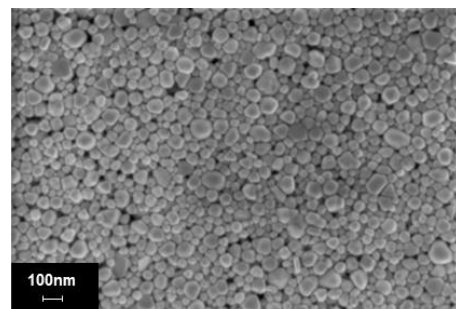
- Uniform and reproducible donor layer with low drying speed
- Stable accurate jetting in different types of laser systems, wide working window of jetting parameters
- High speed printing (20-50kHz), allowing high throughput
- Narrow patterning on plastic and glass substrates (line width ~50 μm, height ~0.5 μm, spacing ~50 μm)
- Laser sintering of LIFT printed pattern, providing good electrical properties

Ink Properties

Typical Values

Metal Loading, Ag (w/w)	75 %
Particle Size (Lumisizer®)	d50 = 70 nm d90 = 130 nm
Specific Gravity	3.06 g/ml
Viscosity* Profile (Malvern Kinexus Pro+)	Shear rate 1/s - 62000 cP Shear rate 1000/s - 300 cP
Surface Tension (Pendant Drop Method)	28 dyn/cm
Particle Size and Morphology (HRSEM)	See HRSEM image

* - Viscosity is very sensitive to small changes in metal loading



Nano Ag, HRSEM Image, x100,000

Electrical Properties

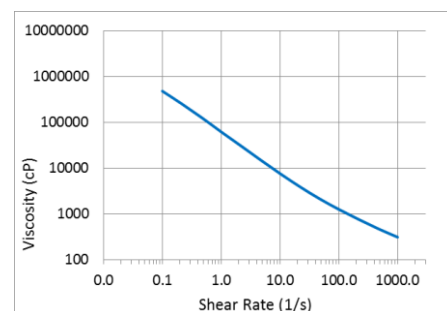
Laser Sintering#

Resistivity (4PP)

LIFT printed line (~1-2 μm thick)
on glass or plastic substrate

≤ 8 μΩ·cm (≤ 5 bulk)

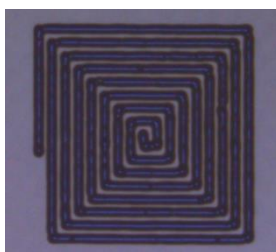
- Parameters should be optimized depending on line geometry and substrate



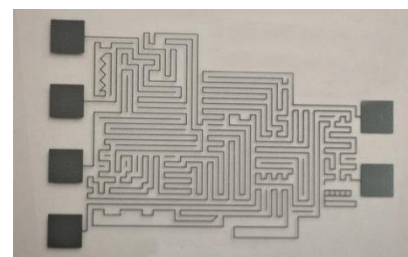
Viscosity profile

Product Applications

- LIFT digital printing
- Printed electronics
- Additive electronic manufacturing



LIFT printed RFID antenna
Courtesy of TNO



LIFT printed highly dense maze
(3x4cm², 70 μm lines, <0.7s, 20kHz)
Courtesy of TNO