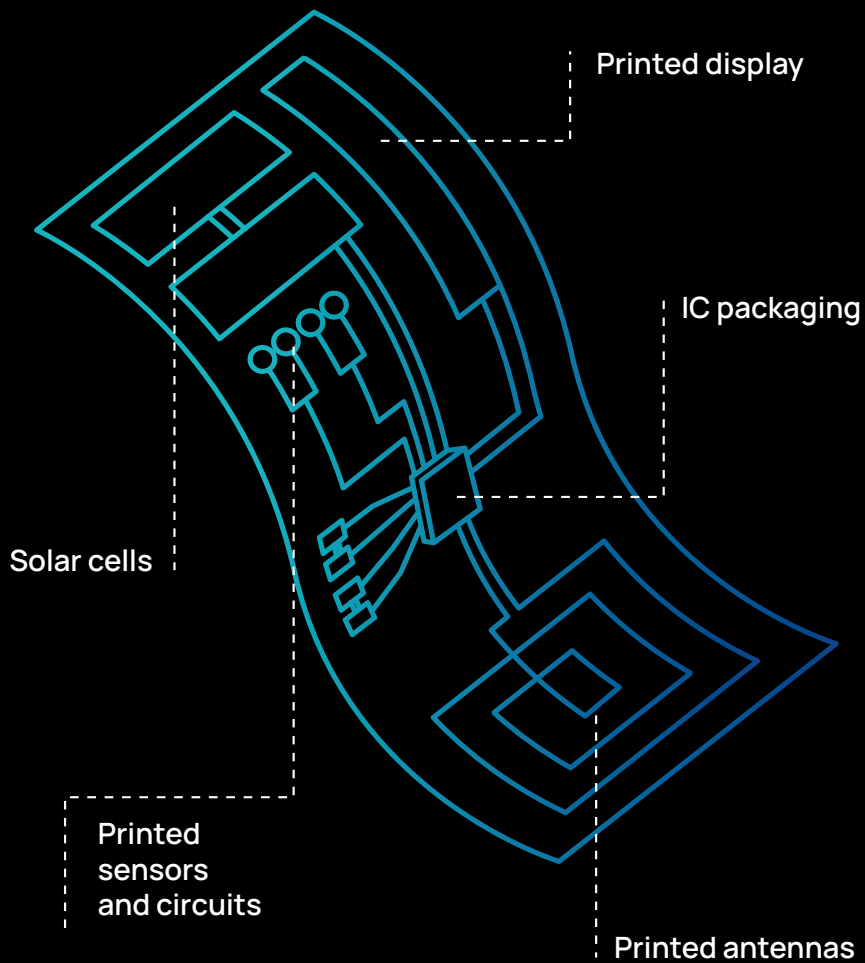




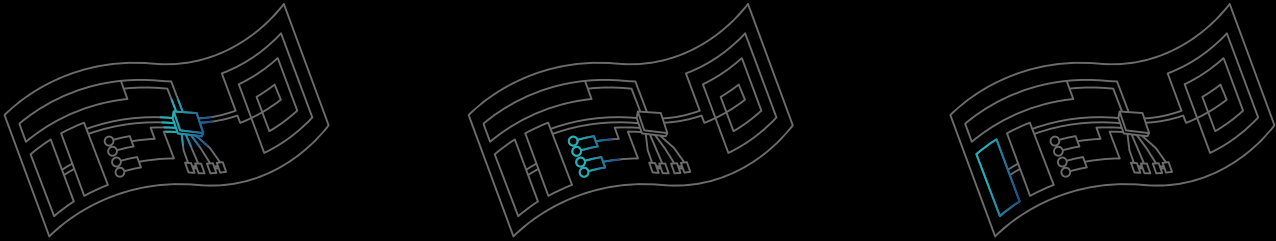
# High-Performance Materials



Metallic Inks & Pastes  
Manufacturer

Your Contract  
Research Partner

# XTPL® Nanoinks Benefits



XTPL have crafted a range of highly concentrated metallic inks (up to 85 wt.%), notable for their superior stability and homogeneity. We apply our expertise to provide materials that are suitable for a wide array of printing techniques and applications. Our nanoinks give you the power to accelerate your development cycles but also ensure the attainment of the necessary resolution and conductivity. These innovations are all part of our commitment to providing solutions that help you stay ahead in your respective field.

## Superior Ink Stability

- Complete control over the manufacturing process, ranging from nanoparticle synthesis to end-product formulation.
- Superior ink homogeneity and stability promoting remarkably prolonged nozzle lifetime.
- Non-clogging behavior of the ink allows for uninterrupted, efficient printing.

## Superior Ink Stability

- Ability to print fine features, even on non-planar substrates.
- Uniform, well-defined printed functional features achieved.
- Exceptional wettability on a variety of substrates: glass, silicon nitrides, silicon oxides, foils (e.g., Kapton, PET, PEN, PC), and silicon wafers.

## High Yield of Printed Structures

- High metal loading (30-85 wt.%).
- Unrivaled electrical conductivity up to 50% of silver bulk conductivity.
- High aspect ratio structures achievable after a single pass.

## Ag Nanoink CL34 Conductive Silver Ink

- Achieves up to 50% bulk silver conductivity, even at low silver concentrations.
- Printable on foils, making it ideal for the manufacturing of flexible electronics.
- Suited for applications where low aspect ratio profiles are required or necessary.

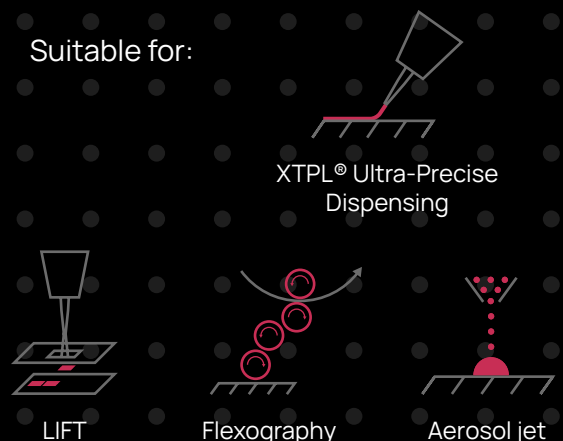


### Typical properties

Silver content (wt. %)	30 ± 2
Density [g/cm <sup>3</sup> ]	1.50 ± 0.05
Average nanoparticles size [nm] (TEM)	35 - 50
Shape of nanoparticles	Spherical
Electrical resistivity [Ω.m]*	3.25 · 10 <sup>-8</sup>
Viscosity (250C, shear rate = 0.2 s <sup>-1</sup> ) [cP]	200 - 400
Solvent(s)	Glycol(s)

\*For recommended sintering conditions

Suitable for:



## Ag Nanoink IJ36 Conductive Silver Ink

- Superior printing stability – over one month of continuous operation with consistent results and without nozzle clogging.
- Unmatched electrical conductivity – surpassing 40% of bulk Ag conductivity.
- High aspect ratio structures – achievable right after single pass printing.
- Compatible with multiple substrates – including Kapton 500HN, PET, PEN, PI, PC, and Glass substrates.

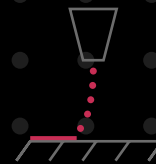


### Typical properties

Silver content (wt. %)	34 ± 2
Density [g/cm <sup>3</sup> ]	1.2 - 1.4
Average nanoparticles size [nm] (TEM)	35 - 50
Shape of nanoparticles	Spherical
Electrical resistivity [Ω.m]*	3.95 · 10 <sup>-8</sup>
Viscosity (250C, shear rate = 0.2 s <sup>-1</sup> ) [cP]	26 - 30
Surface tension [mN/m] (250C)	30
Solvent(s)	Glycol ether
Compatible printheads include but are not limited to:	Konica Minolta KM512, KM1024i Fujifilm Dimatix S-class, Samba G3L, DMC

\*For recommended sintering conditions

Suitable for:



Inkjet

## Ag Nanoink CL60 Conductive Silver Ink

- A high-viscosity product, enabling the printing of fine features with higher aspect ratios.
- Enables easy dispensing and effortless blading for the LIFT process.
- Ensures smoothness of dispensed structures and prepared donor surfaces.



### Typical properties

Silver content (wt. %)	54 - 63
Density [g/cm <sup>3</sup> ]	2.00 ± 0.05
Average nanoparticles size [nm] (TEM)	35 - 50
Shape of nanoparticles	Spherical
Electrical resistivity [Ω.m]*	5.11 · 10 <sup>-8</sup>
Viscosity (250C, shear rate = 0.2 s <sup>-1</sup> ) [cP]	30 000 - 50 000
Solvent(s)	Glycol(s)

\*For recommended sintering conditions

Suitable for:



LIFT



XTPL® Ultra-Precise  
Dispensing

# Ag Nanopaste CL85

## Conductive Silver Paste

- A very high viscosity product that facilitates the printing of ultra-fine features of high aspect ratios.
- Displays unrivaled non-clogging properties, allows long nozzle lifetime (2.5  $\mu\text{m}$  nozzle opening, even more than 1 month of printing).
- Dispensable through capillaries as narrow as 1  $\mu\text{m}$  size, resulting in the dispensing of homogeneous thin lines.

### Typical properties

Silver content (wt. %)	82 $\pm$ 2
Average nanoparticles size [nm] (TEM)	35 - 50
Shape of nanoparticles	Spherical
Electrical resistivity [ $\Omega\cdot\text{m}$ ]*	4.2 $\cdot$ 10 <sup>-8</sup>
Viscosity (250C, shear rate = 0.2 s <sup>-1</sup> ) [cP]	>100 000
Solvent(s)	Glycol(s)

\*For recommended sintering conditions



Suitable for:



XTPL® Ultra-Precise  
Dispensing



LIFT



Dispensing

## Your Contract Research Partner

At XTPL, we understand the importance of staying ahead in today's fast-paced technological landscape. Our team of seasoned experts specializes in Research and Development (R&D) projects, where we develop innovative materials designed to deliver exceptional results for your business.

## Contact our team

✉ [sales@xtpl.com](mailto:sales@xtpl.com)

XTPL is a globally innovative company developing breakthrough, additive manufacturing technology for ultra-precise printing of nanomaterials.

Contact us for more details.

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