



Applied Nanotech, Inc.

a PEN Inc company

3006 LONGHORN BLVD., SUITE 107 AUSTIN, TX 78758
PHONE (512) 339-5020 ♦ FAX (512) 339-5021 ♦ WWW.APPLIEDNANOTECH.NET

Cu-IJ70-W

Water-based Nanocopper Ink

Cu-IJ70-W is a water-based version of our copper nanoparticle ink and is designed for thermal inkjet heads. Cu-IJ70-W can be printed by inkjet and aerosol jet techniques and sintered to form conductive patterns on flexible substrate materials such as polyimide, liquid crystal polymer (LCP), and certain coated papers. The patterned copper ink can be photosintered in atmosphere onto polymeric substrates to achieve highly conductive Cu traces. 30% Cu loading.

Typical properties

Part number	Cu-IJ70-W
Particle Size	20-100 nm
Resistivity	20-50 $\mu\Omega$-cm
Solid Content	30 wt%*
Viscosity	16-25 cP**
Surface Tension	20-30 mN/m
Solvent	Water-based

* Available from 30 wt%

** Measured at 10rpm and 25C with Brookfield LV-1+ viscometer



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Application Notes: Cu-IJ70-W Nanocopper Ink

Description

ANI's Cu-IJ70-W is a water-based version of our copper nanoparticle ink and is designed for thermal inkjet heads. Cu-IJ70-W can be printed by inkjet and aerosol jet techniques and sintered to form conductive patterns on flexible substrate materials such as polyimide, liquid crystal polymer (LCP), and certain coated papers. 30% Cu loading..

Storage and Shelf Life

Cu-IJ70-W ink should be stored in a tightly sealed, leak-proof container at 3-10°C. Do not store at 0°C or below. Cu-IJ70-W can be stored up to 3 months.

Safety and Handling

When working with Cu-IJ70-W ink, use adequate ventilation and wear appropriate protective gear. Cu-IJ70-W can cause eye and skin irritation. The following precautions should be taken when handling Cu-IJ70-W ink:

- Read the Material Safety Data Sheet (MSDS)
- Avoid prolonged breathing of vapor
- Use appropriate safety equipment such as gloves and eye protection
- Wash hands thoroughly after handling
- Keep the paste container closed when not in use to prevent drying and spilling

Processing Procedures

Pre-processing

- Soft-settling is expected with Cu-IJ70-W ink. The Cu-IJ70-W ink requires manual agitation (mix or stir) followed by sonication for 15 minutes.
- After sonication, the ink should be filtered using a 1 micrometer pore size glass fiber filter (PALL Acrodisc® 25mm 4523-T recommended).

Printing

- Printing has been demonstrated using inkjet, aerosolized jet, and wire rod drawdown. Conditions will vary based on technique and substrate.

Drying

- Printed ink can be dried at 100°C for 30 minutes in ambient atmosphere.

Sintering

- Cu-IJ70-W ink on polyimide can be photosintered using a xenon arc-discharge lamp system. Conditions will vary based on substrate.
- Cu-IJ70-W ink can be thermal sintered at temperatures >350°C in a reducing atmosphere (H₂ = 4% in N₂) for 20 minutes.

Clean-up

- Follow appropriate cleaning procedures for equipment used to dispense Cu-IJ70-W ink. Excess ink can be removed with ethanol, IPA, or acetone.

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