AEROSOL JET® MATERIAL STARTER RECIPES

Aerosol Jet Material Starter Recipes enable customers to save time and speed development of new printed electronic processes and applications. Developed by Optomec applications engineers working in our Aerosol Jet Advanced Applications Lab, each recipe provides detailed print and cure instructions covering specialized material handling, equipment set-up, process settings, and in-situ or post processing curing procedures. Expected print results are given for a particular nozzle type and print speed. If applicable, expected electrical and environmental performance data is provided.

Ink Information:

Manufacturer: Clariant
Material: EXPT Prelect TPS 50G2
Viscosity: 15 cP
Solvents: Water, Ethylene glycol
(Cas# 107-21-1)

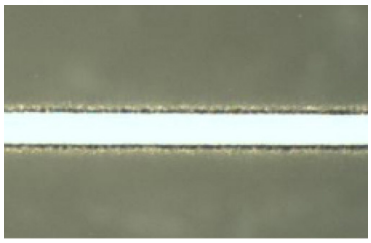


Figure 1 - 100 micron printed Ag feature

Ink Information:

Manufacturer: MicroChem
Material: XP PriElex SU-8
Viscosity: 12 cP
Solvents: PGMEA
(Cas# 108-65-6)

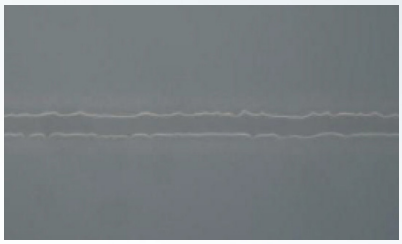
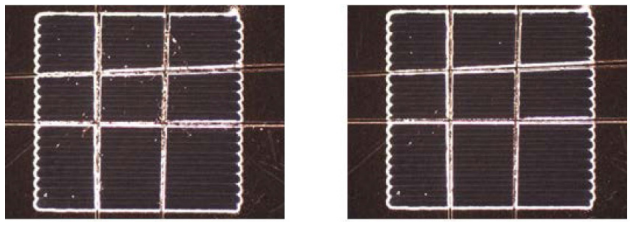


Figure 2 - 200 micron printed SU-8 feature



Pad 1 - Before Pad 1 - After

Figure 3 - Clariant TPS 50 Ag ink Printed on PC/ABS Substrate Using ASTM D3359-09 Adhesion Testing

THICKNESS microns	POST EXPOSURE BAKE TIME minutes @ 95'C
0.5 -2	1 -2
3-5	2-3
6-15	3-4
16-25	4-5
26-40	5-6

Table 1 - Optimal MicroChem SU8 Performance Matrix

KEY FEATURES

- Developed by Optomec Experts – save weeks of trial and error
- Commercially Available Inks and Materials – repeatable results
- Process Specifics – speed R&D and application development
- Post Processing Details – optimized material performance
- Customer Tested – use with confidence

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www.optomec.com

Optomec Inc.
3911 Singer Blvd. NE
Albuquerque, NM 87109 USA

Tel: 505-761-8250
Fax: 505-761-6638
E-mail: sales@optomec.com

EXAMPLE AEROSOL JET® STARTER RECIPES

Adhesion Testing Results:

Polycarbonate: 5B

Before / After

PC-ABS: 5B

Before / After

Polyamide: 5B

Before / After

Kapton: 0B

Before / After

Glass: 0B

Before / After

Nylon 12: 5B

Before / After

ASTM Test Designation: D 3359 – 09

Tape Used: 3M #396

Refer to material vendor SDS for additional details

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Albuquerque, NM 87109 USA

Tel: 505-761-8250
Fax: 505-761-6638
E-mail: requestinfo@optomec.com

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ABOUT OPTOMEC

Optomec® is a privately-held, rapidly growing supplier of Additive Manufacturing systems. Optomec's patented Aerosol Jet Systems for printed electronics and LENS 3D Printers for metal components are used by industry to reduce product cost and improve performance. Together, these unique printing solutions work with the broadest spectrum of functional materials, ranging from electronic inks to structural metals and even biological matter. Optomec has more than 300 marquee customers around the world, targeting production applications in the Electronics, Energy, Life Sciences and Aerospace industries. For more information about Optomec, visit http://www.optomec.com.

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Albuquerque, NM 87109 USA

Tel: 505-761-8250
Fax: 505-761-6638
E-mail: sales@optomec.com