



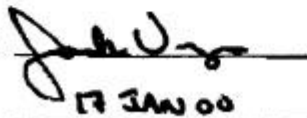
**OPSR 5900 Code CC
Testing Summary**

IPC SM840B Classes T & H

&

Bellcore TR-NWT-000078 Issue 3

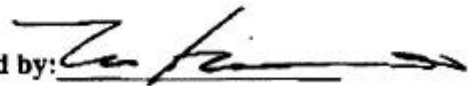
Prepared by:


17 JAN 00

Date:

**Jack Vargo
Product Manager
Imaging Chemicals**

Reviewed by:



Date:

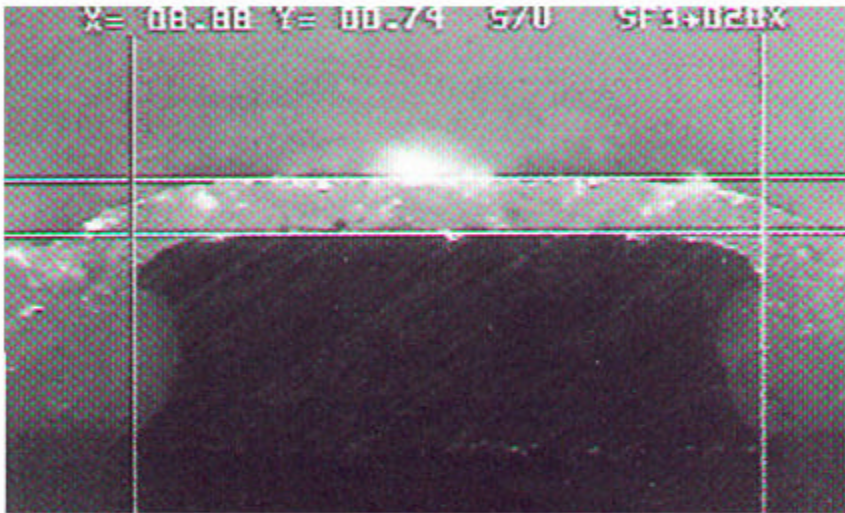
Jan 19, 2000

**Tom Horigome
Chief Engineer
Imaging Materials**



Ronacoat OPSR 5900 Code CC

Ronacoat OPSR 5900 Code CC products are liquid photoimageable, aqueous developing, two-part, epoxy-acrylate soldermasks, specially designed for curtain coating application. This soldermask series meets or exceeds all requirements of IPC SM 840C Class T & H, MIL 55110 D, and Belcore specifications over copper, tin lead, nickel, or gold circuitry.



- *Maximum encapsulation/protection of isolated and narrow circuitry with excellent mask retention on trace edges.*
- *Ten (10) mil PTH development up to 72 hours after drying.*
- *Capable of resolving 2.0 mils web features in a production environment.*
- *Excellent electrical properties exhibiting >2,500 VDC/mil dielectric strength, $>1 \times 10^{12}$ SIR, and $3.7D_k$.*
- *Excellent low level 0-2 micrograms NaCl ionic equivalence retention.*
- *UL rated V-O for 20 seconds @ 550 °F (290 °C). File # E80180.*
- *Reliable resist for electroless Ni/Au plate, an increasingly popular alternative to hot air solder leveling for SMT.*



OPSR 5900 Code CC Physical, Electrical, and Chemicals Properties

<u>Criteria</u>	<u>Requirement</u>	<u>OPSR 5900 Results</u>
Adhesion	Tape >90%	100% Cu, Ni, Sn, Sn/Pb, Au
Machinability	No cracks or tears	Pass,
Pencil Hardness	F	≥6H
Flammability	UL # shall not be raised	Pass, 94V-O
Solderability & Resistance to solder	No adherence to mask.	Pass, J-STD-003
Hydrolytic Stability	No irreversible change of state.	Pass, no change
Dielectric Strength	500 VDC	>2,500 VDC
Insulation Resistance	5 x 10 ⁸ before solder. 5 x 10 ⁹ after solder.	2 x 10 ¹¹ Ω 2 x 10 ¹¹ Ω
Moisture and Insulation Resistance	5 x 10 ⁹ - final	1 x 10 ¹² Ω
Electrochemical Migration 1000hrs 85°C/85%RH 20VDC-Bias/100VDC-Test	No visible evidence.	Pass 1.12 x 10 ⁹ ⇒ 5.56 x 10 ⁸ Ω
Dissipation Factor		3.0 x 10 ⁻² (1M Hz)
Dielectric Constant		3.7 (1M Hz)
Flux, Cleaning Agents and Solvents	No effects.	Pass, no change.
Ionic Contamination		0 - 2 µg/in ² NaCl equiv's.



OPSR 5900 Code CC Bellcore Specifications Testing Summary

<u>Criteria</u>	<u>Requirement</u>	<u>OPSR 5900 Results</u>
Visual	No cracks, inclusions, peeling, etc..	No evidence of failure
Non-nutrient	No support to biological growth.	Pass - no degradation.
Adhesion	Copper 100% Au or Ni 90% Laminate 100% Sn/Pb 90%	100% 100% 100% 100%
Abrasion	F hardness	≥ 6H
Flammability		UL 94V-O
Solder Resist	No adverse effect.	Pass, J-STD-003
Hydrolytic Stability	7-10X, No evidence of growth.	No discoloration or growth.
Dielectric Strength	500VDC/mil	>2,500 VDC/mil
Insulation Resistance	>1.2 x 10 ⁴ Mohms	>1 x 10 ¹² Ω
Electrochemical Migration	IR will not degrade by more than a decade	Does not degrade - no evidence of electrochemical migration.