



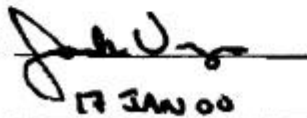
**OPSR 5900 Code CC
Testing Summary**

IPC SM840B Classes T & H

&

Bellcore TR-NWT-000078 Issue 3

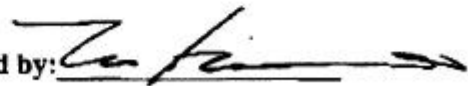
Prepared by:


17 JAN 00

Date:

**Jack Vargo
Product Manager
Imaging Chemicals**

Reviewed by:



Date:

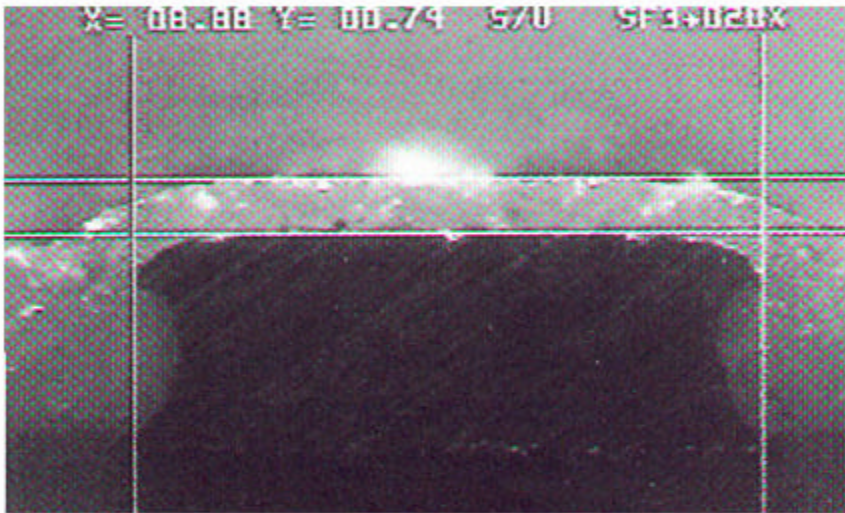
Jan 17, 2000

**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. |