CASE STUDY

# Conductive Flex Silver Adhesive for EP Catheter Interconnects

*SunRay S-FSCP-S1 | CathRx Electrophysiology Catheter Assemblies*

**Opportunity**

CathRx EP catheter assemblies require reliable electrical interconnects that maintain signal integrity under repeated flexing and micromotion. Within the catheter, conductive joints are exposed to mechanical stresses arising from manipulation, deflection, handling, and clinical use. SunRay custom-engineered a single-component conductive silver adhesive specifically for this dynamic interconnect environment.

**Substrates:** Fine copper conductors and catheter polymer materials (non-blood-contacting interconnect regions).

**Challenges**

- Maintain electrical continuity under repeated flexing and micromotion
- Withstand mechanical stresses without cracking or delamination
- Eliminate brittleness, mixing variability, and limited pot life of two-part silver epoxies
- Support fast, repeatable manufacturing with long pot life and quick cure

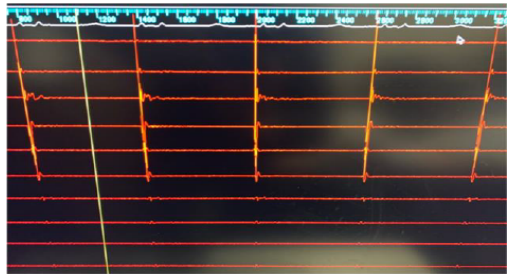
## Solutions | Product: SunRay S-FSCP-S1 Conductive Flex Silver Adhesive


### STEP 1: Components

Single-component formulation — no mixing, no frozen storage, and reduced operator dependency. Bonds fine copper conductors to catheter polymer substrates in non-blood-contacting regions.

### STEP 2: Dispense & Cure

Stable viscosity over a 2-week pot life enables robotic-arm dispensing. Cures in minutes at temperatures below 120 °C, compatible with existing catheter materials and ovens.



### STEP 3: Post-Assembly Performance

Stable, low-noise electrical performance under mechanical stress. Strong adhesion to copper and polymers; no cracking or delamination under repeated flexing. 3-year shelf-life feasibility assessed via accelerated aging.

## Benefits

- **Time savings:** ~10 min saved per shift in adhesive prep; ~13 min saved per catheter on cure time.
- **Automation-ready:** 2-week pot life eliminates viscosity drift, enabling robotic dispensing.
- **Process consistency:** Single-part formulation removes mixing and operator-dependent variability.
- **Mechanical durability:** Stable conductivity under repeated flexing — no cracking or delamination.
- **Signal integrity:** Low-noise transmission of low-amplitude bioelectrical signals.
- **Simplified logistics:** No frozen storage; cures below 120 °C; compatible with existing equipment.