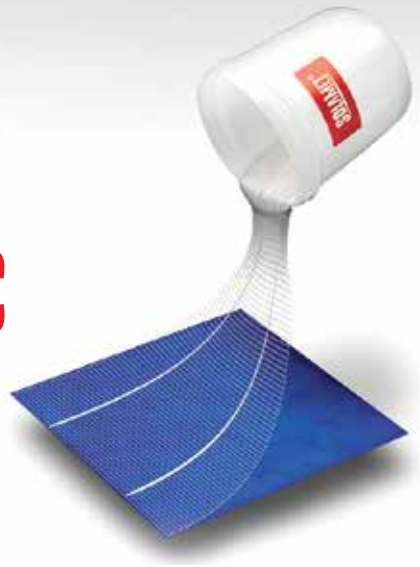
SOLAMET®

SOLAMET ELECTRONIC MATERIALS CO.



Engineering the Contact Layer of the Solar Age

In photovoltaic manufacturing, silver paste is not merely a conductive medium—it is the engineered electrical interface that determines how efficiently sunlight is converted into bankable electricity. Every printed finger on a solar cell represents a balance between conductivity and shading, and every gram of silver directly influences cost per watt. Within this specialised discipline stands Solamet Electronic Materials Co., a focused global leader dedicated exclusively to photovoltaic silver metallization paste.

Solamet became an independent enterprise in 2021 following the acquisition of the DuPont Solamet photovoltaic metallization paste business, yet its technological lineage dates back to the early industrialisation of crystalline silicon solar cells in the 1980s. This continuity underpins its market credibility. Metallization is not a commodity business—it is a cumulative science shaped by decades of formulation refinement and process optimisation.

Today, Solamet operates as a specialist platform with a singular focus: optimising conductive silver pastes for photovoltaic applications. In the broader precious metals ecosystem, this positions the company as a critical downstream industrial consumer of high-purity silver, transforming refined metal into precision-engineered contact systems for gigawatt-scale solar production.

A Portfolio Aligned to Cell Architecture Evolution

Rather than offering a universal product, Solamet maintains a structured portfolio aligned with the evolving photovoltaic technology roadmap. Its front-side silver pastes are engineered for fine gridline printing, enabling:

- Narrower finger widths
- Higher aspect ratios
- Reduced shading losses
- Stable adhesion and low contact resistivity

Fine-line capability has become a decisive efficiency lever in modern solar cell design.

Back-side and solderable pastes complement this offering, ensuring reliable interconnection and thermal robustness during module assembly.

As the industry has transitioned from conventional cells to advanced architectures, Solamet's formulations have evolved accordingly. Its portfolio supports:

- PERC passivation stacks with controlled fire-through behaviour
- N-type and boron-doped emitters
- Advanced TOPCon structures
- Specialised via-fill and interconnect designs

Each paste is calibrated to firing windows, dielectric compositions and emitter characteristics—reflecting the reality that metallization performance is inseparable from cell architecture.

Manufacturing as a Discipline of Precision

Silver paste manufacturing depends on the integration of three tightly controlled elements: silver powder engineering, glass frit chemistry and organic vehicle systems.

- Particle size distribution influences sintering and conductivity.
- Frit chemistry governs adhesion and contact resistivity.
- Rheology determines print stability at high throughput speeds.

Solamet's competitive strength lies in the precise integration of these domains under strict statistical process control. High-purity silver dispersion, controlled frit synthesis and precision mixing ensure batch-to-batch consistency.

In gigawatt-scale solar manufacturing, even minor paste variability can translate directly into yield and efficiency fluctuations. Manufacturing discipline, therefore, is inseparable from financial performance.

Global Positioning and Customer Proximity

Photovoltaic manufacturing remains concentrated in Asia, with strategic capacity in Europe and North America. Solamet operates as a global supplier with facilities and technical capabilities positioned close to major solar manufacturing clusters.

This positioning enables:

- Reduced logistics risk
- Faster qualification cycles
- On-site technical collaboration
- Supply chain resilience

Proximity to customers is not merely logistical—it is strategic, enabling rapid adaptation to technology transitions.

Design-In Collaboration & Silver Thrifting

Silver paste is never "plug-and-play." Its performance is co-optimised with screen parameters, drying profiles and firing curves. Solamet's operating model centres on close collaboration with process engineering teams to fine-tune:

- Firing windows
- Adhesion performance
- Contact resistivity
- Silver laydown per cell

Silver represents the dominant cost component of metallization paste, making silver-thrifting innovation central to competitiveness.

Innovation themes include:

- Lower grams of silver per cell
- Enhanced conductivity at reduced loadings
- Fine-line print capability
- Stable performance at higher line speeds

For the precious metals market, photovoltaic paste remains one of the most structurally significant segments of industrial silver demand, directly linked to global solar deployment.

Sustainability and Compliance

Sustainability extends beyond renewable energy generation to materials sourcing and manufacturing discipline. Solamet aligns with internationally recognised governance frameworks, including OECD-aligned due diligence and electronics supply chain compliance expectations.

Material efficiency remains a dual objective:

- Economic competitiveness
- Resource optimisation at terawatt deployment scale

Manufacturing systems align with established quality and environmental management standards, reinforcing traceability and regulatory compliance.

Strategic Outlook in the Terawatt Era

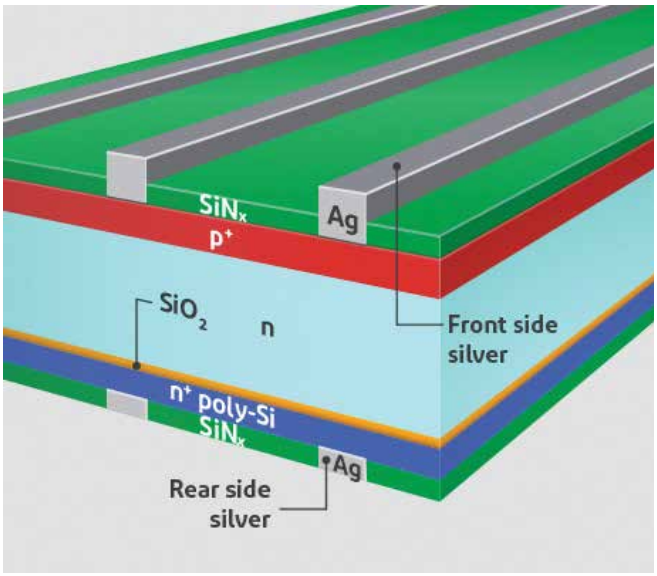
The photovoltaic industry is moving toward terawatt-scale deployment. This transition will intensify pressures around:

- Continued silver reduction per watt
- Compatibility with advanced N-type and TOPCon architectures
- Higher throughput and automation
- Performance stability on thinner wafers

Solamet's roadmap focuses on:

- Fine-line metallization technologies
- Lower-temperature firing compatibility
- Enhanced adhesion at reduced silver loadings
- Print precision for next-generation screen systems

Scaling capacity while maintaining chemistry precision will define leadership in the next phase of solar expansion.



Conclusion

Silver paste may represent only a thin printed layer on a silicon wafer, but its industrial significance far exceeds its physical thickness. It is the engineered boundary where refined silver becomes functional infrastructure in the energy transition.

Solamet Electronic Materials Co. occupies this silver–silicon interface with focused expertise and sustained innovation. For the precious metals community, the company illustrates a powerful reality: silver is not only a store of value—it is a conductor of the global solar economy.