

# PV Assembly Solutions

ALPHA® & Kester® Solder Materials Specifically Designed For PV Applications

## Engineered for Reliability and High Throughput Production

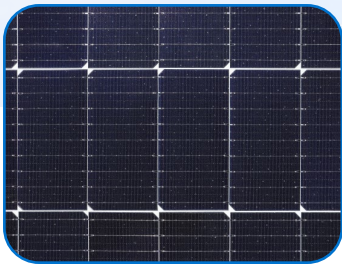
Offering a complete range of soldering materials for PV assembly, including fluxes, cleaners, solder pastes, bars, preforms, and cored wires, developed to meet the specific demands of photovoltaic applications and reduce production challenges across key PV market segments.

### PV Module Assembly

Liquid Flux  
Cleaner  
Cored Wire  
Solder Paste

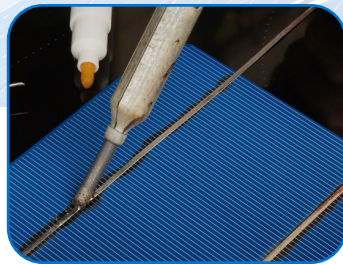
### PV Ribbon Assembly

Tinning Flux  
Solder Bar



#### Wire/Busbar Interconnection

ALPHA Cored Wire  
ALPHA Solder Paste  
ALPHA/Kester Flux



#### Rework

ALPHA/Kester Flux  
ALPHA Cored Wire



#### PV Ribbon Tinning

ALPHA Flux  
ALPHA Alloys



#### Junction Box Assembly

ALPHA Cored Wire  
ALPHA Solder Paste  
ALPHA Preforms

## Key Features

- **Superior Wetting Performance** – Supports high yields and maximizes throughput
- **Reliable Interconnects** - Excellent solderability with long-term joint integrity
- **Broad Process Compatibility** – Enables both SnPb and lead-free soldering processes
- **Optimized Total Cost of Ownership** – Enhances productivity while reducing overall process costs
- **Low-Residue Flux Formulation** – Minimal, tack-free residues reduce maintenance and downtime

### Higher Yields



### Long Term Reliability



### Long Term Sustainability



### Low Machine Residue



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ALPHA® & Kester® Solder Materials - Best-in-Class Reliability and High Throughput

## Ribbon Tinning

APPLICATION	PRODUCT TYPE	PRODUCT	FEATURE
Dip Tinning	Liquid Flux	ALPHA® PV-41C	VOC-Free, specially designed for PV ribbon/wire tinning application
		ALPHA® PV-21	Alcohol based, low solid
Dip Tinning Fluxless Tinning	Solder Alloy	Tin-Lead Based Alloys With Melting Point ~180 °C	Available in ALPHA® Sn60Pb40 Plus, Sn60Pb40, Sn62Pb36Ag2
		ALPHA® EcoSol Lead-Free Alloys with Low Melting Point ~180 °C	Over 30% lower price compared to most Pb-free alloy
		Lead Free Alloys With Point ~220 °C	Available in Sn96.5Ag3.5, SAC305, ALPHA® SACX Plus 0107/0307/0807, ALPHA® SnCx® Plus 07

## Module Assembly

APPLICATION	PRODUCT TYPE	PRODUCT	FEATURE
MBB (Wire Ribbon) Interconnection	Liquid Flux	ALPHA® SF828-MBB	Fast wetting and less residue
Bus Ribbon Rework		Kester® 952-S Kester® SF800-LR ALPHA® PV-71	Halogen-free and low solid
Shingling and xBC Interconnection Structured Ribbon Junction Box	Solder Paste	ALPHA® PV-100 for SnPb ALPHA® PV-300 for Pb-Free ALPHA® PV-500 for Low Temp	Available in multiple alloy types in T3/T4 powder form, available in both syringe and jar
Junction Box Wire/Busbar Interconnection Rework	Cored Wire	ALPHA® Telecore HF-850 ALPHA® Telecore XL-825	Available in various alloys for both robotic or manual soldering
Junction Box	Solder Preform	ALPHA® PV-Ready ExactAlloy™	Back side solar cell assembly
Equipment Maintenance Flux residue	Cleaner	ALPHA® 2100	Efficient aqueous cleaner for residue removal
		ALPHA® SM-110	Fast effective cleaning of residues from mechanical parts
Solar Module	Thinner	ALPHA® 425	Thinner for flux

