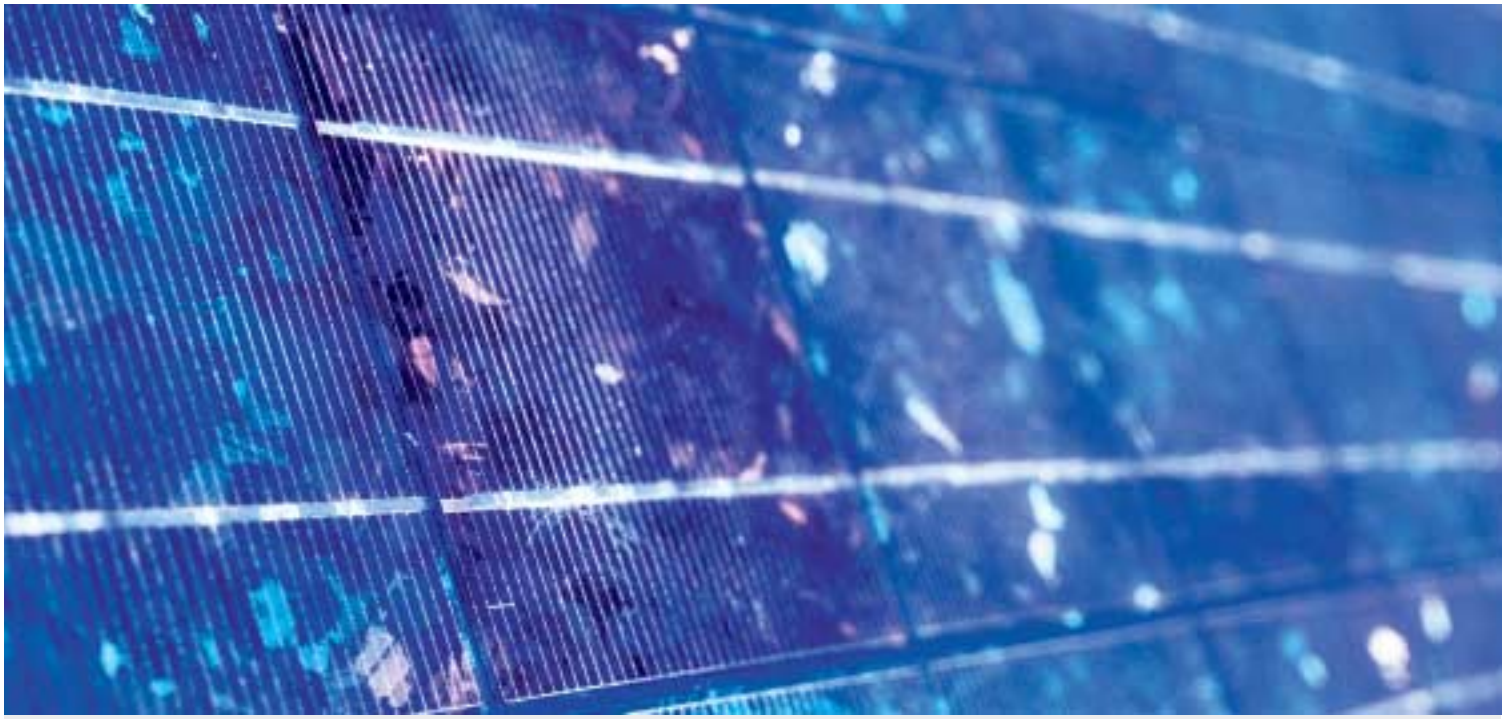
LUVATA
Partnerships beyond metals



Sunwire

The sun can be compared to a giant nuclear fusion power plant. Every year, it supplies the earth's continents with more than 219,000 billion kWh of energy – all for free. Photovoltaic technology harnesses the power of the sun to transform sunlight into electricity without producing any harmful waste products. Photovoltaic power generation has become an important and rapidly growing source of energy.

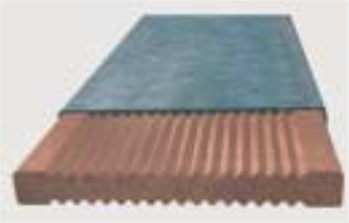
Solar cells made of silicon can be found at the heart of photovoltaic modules. They are soldered together with high performance copper inter-connectors made from Sunwire™, which was developed in conjunction with the module manufacturers expressly for this purpose. Sunwire™ is available in a range of dimensions and tin plating options, and it comes with the assured quality associated with Luvata's skilled workforce and highly automated production process.

About Luvata
Luvata is a world-leader in metal fabrication, component manufacturing and related engineering and design services. We are committed to partnering with our customers to help them increase their competitiveness. Our products and services enable our customers to improve operational efficiency, improve products and reduce tied-up capital. This focus on our customers' results, backed by our unfailing reliability, makes us a partner on which our customers base their future development.

LUVATA
Partnerships beyond metals

Connections are for Life
Beneath its hot-dipped plating, the base of Sunwire Powergrip has a new modified shape. We have introduced longitunal serration to the base material, increasing its surface area by up to 15%. This means that Sunwire Powergrip can enhance soldering performance in three ways. The increased surface area strengthtens the joint between the solar cell and the wire; the perfectly level plating surface makes handling much easier in automated soldering line; and the larger contact area between the solar cell bus bar and the wire means that soldering temperatures can be reduced.

Sunwire Absorber is offering a modified plating surface especially for infrared soldering processes. By increasing the soldering surface and minimizing the reflection of the plating Sunwire Absorber is significantly improving the process by higher energy absorption.



Sunwire POWERGRIP

Sunwire ABSORBER

Spool SV150

Disc SV380

Technical Data Sunwire

Dimensions*

Rolled from round wire:	
Thickness (mm):	0.080-0.500
Width (mm):	1.000-6.000

With slitted edges:	
Thickness (mm):	0.020-0.500
Width (mm):	6.000-15.000

Platings (hot dipped)*

Lead free:	Sn100; SnAg 96,5/3,5; SnAgCu 96,5/3,0/0,5
Leaded:	SnPbAg 62/36/2; SnPb 63/37; SnPb 60/40
Low temperature:	SnBiAg 60/38/2; SnBi 60/40
Plating composition and thickness	(10-40 µm +/- 3 µm each side)

Base Materials

Cu-ETP1	CDA 110-Electrical Conductivity 100% IACS
Cu-OF1	CDA 102-Electrical Conductivity 100% IACS

Mechanical Properties

Tensile Strength	R_m (N/mm^2):	<250
Available Yield Strengths	$R_{p0.2}$ (N/mm^2):	<140
	$R_{p0.2}$ (N/mm^2):	<110
	$R_{p0.2}$ (N/mm^2):	<90
Elongation at fracture:		>25 %
Camber (mm/m):		<10

Spools*

SV 150	
Spindle Diameter (mm):	16
Outer Diameter (mm):	152
Width (mm):	121

Discs

SV380	
Spindle Diameter (mm):	102
Outer Diameter (mm):	381
Width:	depends on wire width

*Also according to customer specifications

Luvata Pori Oy – Electrical Power
Kuparitie, P.O. Box 60, FI-28101 Pori, Finland
Tel: +358 2 626 6111, fax +368 2 626 5318

Luvata Malaysia Sdn Bhd – Electrical Power
Plo 573, Jalan Keluli 10, Kawasan Perindustrian Pasir Gudang,
81700 Pasir Gudang, Johor, Malaysia.
Tel: +6 07 252 6688, fax +6 07 252 3733