

Sunwire®

LUVATA
Partnerships beyond metals





Connections in the sun

Luvata has long been a pioneering company in photovoltaic energy. The development of Sunwire®, a copper-based flat wire used to make connections between silicon cells in photovoltaic modules, made the automated mass-production of solar panels possible. Since then, we have continued to develop our own proprietary technology, and our advanced processing means that Sunwire® is now softer and more versatile than ever before.

Sunwire® has minimal camber, is burr-free and fully coated to ensure that it is consistently reliable. We believe there is no-one better placed than Luvata to understand the needs of the photovoltaic market and translate them into tailor-made, reliable, efficient solutions.

The sun never sets on Sunwire® production

At Luvata we produce Sunwire® in Europe, the Far East and North America, so we can be local to all our customers, and can avoid the time and money involved in long-distance shipping. What is more, in each of our facilities, the same processes are used and the same exacting standards applied, so you can be sure of the identical product and the same high quality, wherever in the world you are ordering from.

Partnerships Beyond Metals

We pride ourselves on our track record of working together with our customers to design unique solutions to the most challenging problems. We make it our business to help improve our customers' end products, improve their operations and increase the financial efficiency of their business. To make this happen, we ensure that our very best technical experts are available to work with our customers at all times.



Like a web, catching the sunlight:

Soft, straight and flexible.

Adaptable, connective and everywhere.

This is Luvata's Sunwire®.

“Sunwire® is an incredible success story for Luvata. Since we developed it many years ago, and enabled the automated mass-production of solar modules, the market for photovoltaic energy has grown enormously and technology has developed at speed. Our technical experts have continued to improve Sunwire®, optimizing its softness so that it can be used on the thinnest silicon wafers, and creating smaller specifications without sacrificing quality. Now, Sunwire® is better than ever and Luvata is continuing to lead the way in the photovoltaic industry.”



Jussi Helavirta
Executive Vice-president
Special Products Division

Pushing the boundaries of knowledge and innovation



Monocrystalline



Polycrystalline



Thin-film

Bespoke design to meet every need

Luvata Sunwire® is a tailor-made product. Every customer has their own unique needs so we fulfil every request individually. To make this happen, our technical service personnel work closely with our customers to choose the right product for their application and to design a solution that works.

Sunwire® is rolled from round wire and hot dip tinned. Therefore it is burr-free and fully coated. All our Sunwire® production facilities comply with quality, environment, health and safety management systems and provide statistical process data upon request.

Soft copper is kinder to fragile silicon solar cells.

Softer copper has many advantages including faster throughput, better yield and a much lower breakage rate for delicate silicon solar cells. Luvata has long been able to produce Sunwire® with a yield strength below 70 N/mm², in normal production. Now, due to technical advances, we can achieve far lower yield strengths on many products.

We provide all typical coatings, including RoHS compliant lead-free coatings. Due to bigger spools there are less interruptions in module production and therefore your productivity is improved.

More watts out of the modules

Soft copper has significant advantages. Because of the low yield strength, our Sunwire® creates less tension to the cell during the soldering, which decreases the cell breakage rate. Another advantage of the soft copper is that bigger base copper cross-section can be used, which in turn improves the total output of the module.



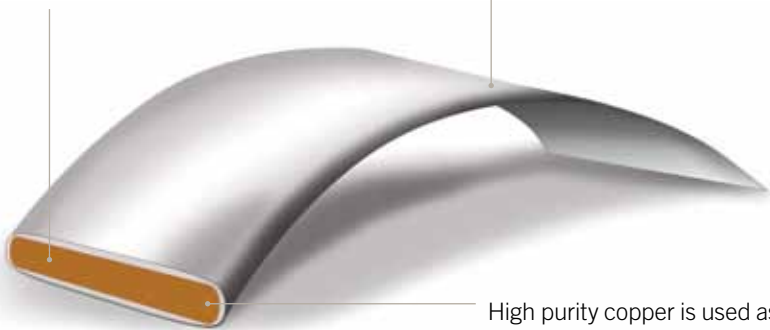


Sunwire® is rolled from round wire and hot dip tinned.

Cross-section of Sunwire®

The copper core is extremely flat because of our tight tolerances.

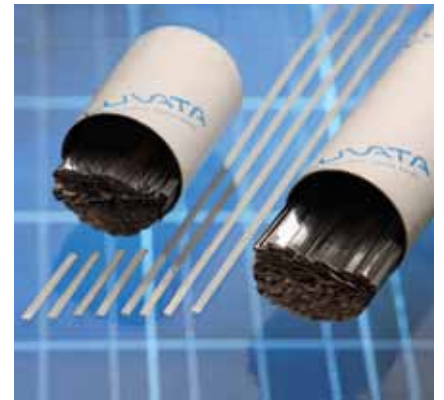
Sunwire® is fully coated so there is no risk of discolouration due to the exposed copper.”



High purity copper is used as a base material.

We roll Sunwire® from round wire to ensure high consistency and no burrs.

State of the art rolling enables the tightest tolerances for thickness and width.



Sunwire® is also available in pre-cut form. All our packaging materials have been designed to protect the product during transportation and storage, and are fully recyclable.



Can anyone remember a more exciting time than this?

We are entering into a new era.

Two decades ago, the world started to talk loudly about carbon emissions and man's effect on climate change. Talk gave way to action, actions become policies. Then the demand for alternatives began and industry followed.

Today, almost everyone has an opinion on energy efficiency and most of us are doing something about it – from tiny lifestyle changes to expensive adoptions of efficient technology. The journey towards a more sustainable future has truly begun. There is an undeniable need to create and consume energy in better ways than ever before and this has brought two other huge forces with it.

The first force is lifestyle. Over three billion people live a life today that was unimaginable just 150 years ago: electricity, plastics, flight, cars, phones, computers, sanitation and many more things accompany us effortlessly in our

modern lives. Three and a half billion other people aspire to that standard of living, and they will not take 150 years to attain it, but maybe 15. By 2050, it will be five billion people.

The developed world, particularly its manufacturers, has the opportunity to influence what kind of technology the emerging world adopts. Will it be sky-choking, inefficient, wasteful technology, or will the developing world benefit from the newest technology we have developed and step into a cleaner, better lifestyle? The direction of technology is therefore the second force.

Technology is becoming smaller and faster and lighter and more efficient. The more we push back the boundaries of what can be done, the more we push materials to perform to the very best of their properties. This will begin to dictate our choice of materials. The necessity of selecting the right one for the right application is beyond dispute.

In this era, driven by lifestyle and technology, human development will be defined by bringing the right, most responsible materials and engineering to our hungry, growing, demanding societies. The world itself depends on that.

Luvata's Sunwire® is a perfect example – it is the softest, straightest, flattest product for the most demanding applications. It is lead-free. We produce it in the most efficient manner in locations right across the world and right where it is needed.

It is connected to demand and connected to the future – connected in the Sun and connected around the world. That's why we mean it when we say: "connections are for life".

About Luvata



What does Luvata see for the future?

We have always aimed to improve our customers' products and processes, and to help them increase the efficiency of their businesses. But our vision is bigger than that. If human society is going to maintain the lifestyle that we all enjoy today AND offer

it to emerging societies, we will all need to become much more efficient and to take much less from the planet. We are helping companies to make their products, processes and production more sustainable: do more, waste less, and pollute less.

What's Luvata's plan for getting there?

Luvata is increasingly bringing its expertise and dedication to high-growth regions and markets around the world. We are stepping into niche and specialist markets with our high-value,

engineered solutions, and we are developing new solutions in partnership with our customers to conquer challenges at the front end of market demand.

How does Luvata behave?

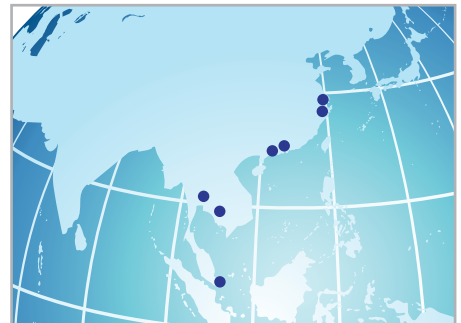
In doing all this, we resolve to be the partner of choice for our customers, the employer of choice for our staff, and to be a positive

and responsible friend to everyone else. We strive to be open-minded and focused on getting results; and when we promise, we deliver.

Where in the world are we?

The sun never sets on Luvata: our global footprint stretches across America, Europe and Asia. Our diversity of locations, cultures and markets gives us access to a wealth of knowledge and expertise

that simply keeps growing. It means that we are local to our customers, wherever in the world they are and can be responsive to their needs, including fast local delivery straight to the door.





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 their products and operational efficiency and reduce tied-up capital. Because we focus on our customers' results and are unfailingly reliable, we are the partner on which our customers base their future development. See www.luvata.com for local contacts in your country.

www.luvata.com

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