

The background of the entire image is a scanning electron microscope (SEM) image of metal powder grains. The grains are spherical and have a textured, cratered surface. They are arranged in a somewhat regular pattern, with some grains appearing larger than others. The lighting is from the side, creating highlights and shadows that emphasize the three-dimensional nature of the particles. The overall color palette is a range of browns and oranges, from dark chocolate to light tan.

Giving every grain a purpose.

Metal Powders

SAFINA

Safina a.s.

Safina is one of the largest technology companies in the **Czech Republic** in the field of **complex processing and production of products from precious and non-ferrous metals** and has been an integral part of the Czech industry for **more than 100 years**.

Safina's broad portfolio includes products for the glass, automotive, petrochemical, pharmaceutical and healthcare industries, space programs and aerospace, electronics and electrical engineering, laboratories, jewellery and surface treatment, additive manufacturing (3D printing) and Cold Gas Spray applications.



1860

• Founding of G. H. Scheidsche Affinerie by George Adam Scheid

1966

• Start of thermo-couples production

2003

• Start of target production

2012

• Start of metal powder production for 3D printing

2022

• In-house AM technologies

1950

• The national company Safina is founded in Vestec

1992

• Safina becomes a private company

2010

• Safina expands to the USA

2016

• Full PGM refining possibilities in-house

Metal Powders for Additive Manufacturing

Safina's atomized metal powders are tailored specifically for additive manufacturing processes such as **DMLS/SLM**, **EBM**, **DED**, **BJ**, **MIM** and **CGS**. Fine powders with the high repeatability and reproducibility can be modified based on the customer requests in order to reach desired material properties. Safina offers variety of powder alloys and wide range of particles size distribution (PSD).



Typical Powder Range:

- Cu (up to 4N)
- CuCr1Zr
- CuSn
- CuAl10
- CuAg3Zr
- CuAg10
- CuAg30
- AW 2xxx, AW 6xxx, AW 7xxx
- Silver, Gold, Platinum, Palladium (4N or alloys) as per customer requirement

Remarks:

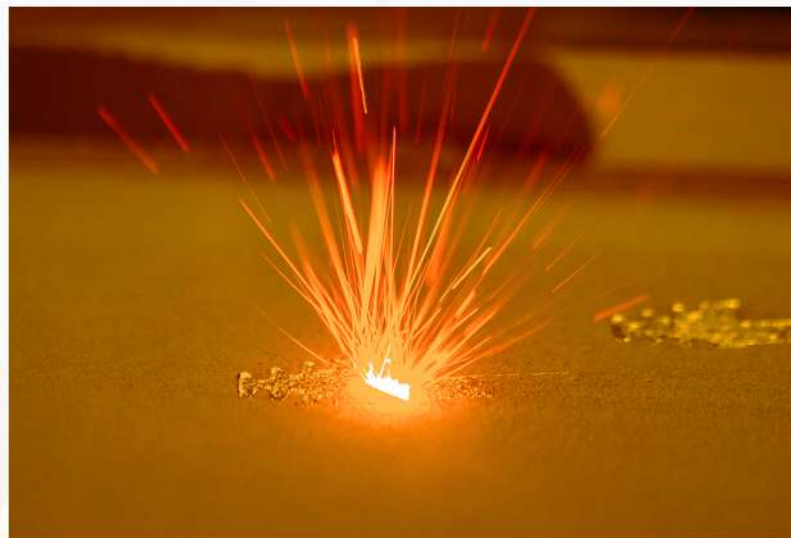
- excellent sphericity
- low satellite content
- high flowability
- controlled oxygen content
- possibility of large lot size as well as small test batches
- high customization capability
- protective packaging
- advanced quality control

Additive Manufacturing

We are using the latest **Laser Powder Bed Fusion (LPBF)** technologies from leading 3D printer manufactures with high-performace dual IR lasers (1kW) and green lasers (200W). Our focus is strictly on pure copper, copper alloys and precious metals.

Remarks:

- powders for AM are manufactured in-house
- close cooperation with 3D printers manufacturers
- flexibility and cost effective solutions
- several levels of post-processing
- high-level quality control
- R&D driven in AM processes

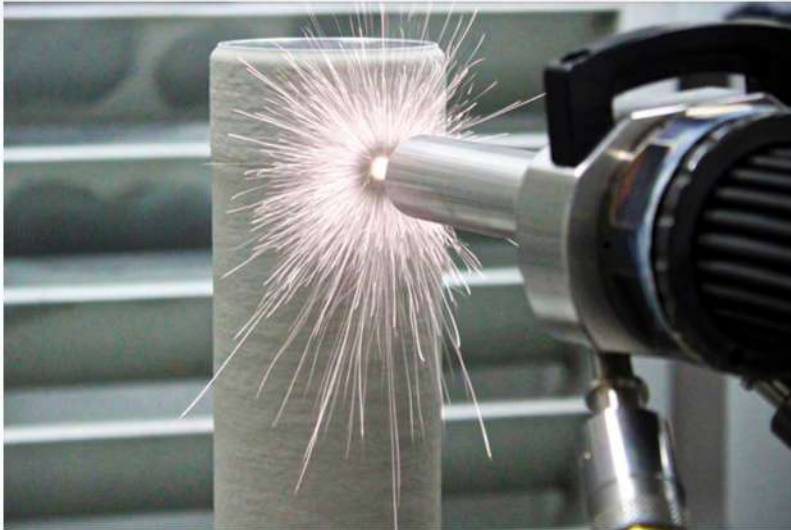


Cold Gas Spray

Safina delivers powders for **Cold Gas Spray (CGS)** and offers job shop using CGS and for these applications are used mainly powders from own production. CGS offers substantial options of applications like thin and thick coatings, combination of layers and metal parts repair.

Remarks:

- wide range of powders for spraying
- unique combination of materials (powders and substrates)
- high productivity due to the high building rate
- perfect homogeneity of micro and macro structure
- cold method - temperature of sprayed particles remains below melting point and therefore unique properties are reached





Core-Shell Powders

Safina delivers its innovative know-how - customized core-shell powders that are designed and manufactured to meet industry's exact requirements.

Remarks:

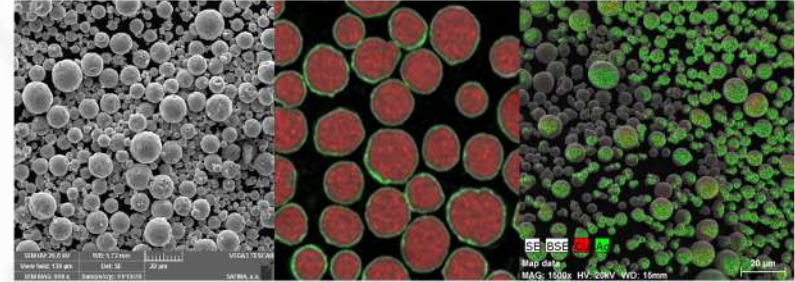
- a wide range of particle sizes
- possibility to coat different powders
- different combination of core and shell material

Application:

- electromagnetic shielding
- radiofrequency shielding
- microelectronics
- photovoltaics
- cold spray deposition technique

Typical Quality Inspection Methods:

- particle size distribution
- apparent density (AD)
- tap density (TD)
- moisture content
- loss of ignition
- cross section



Core material	Cu, W, Ag
Shell material	Ag, Cu
Shell material content (wt. %)	1-50
Particle size (µm)	1-100
Particle shape	spherical
Layer thickness (µm)	0,3-2,5

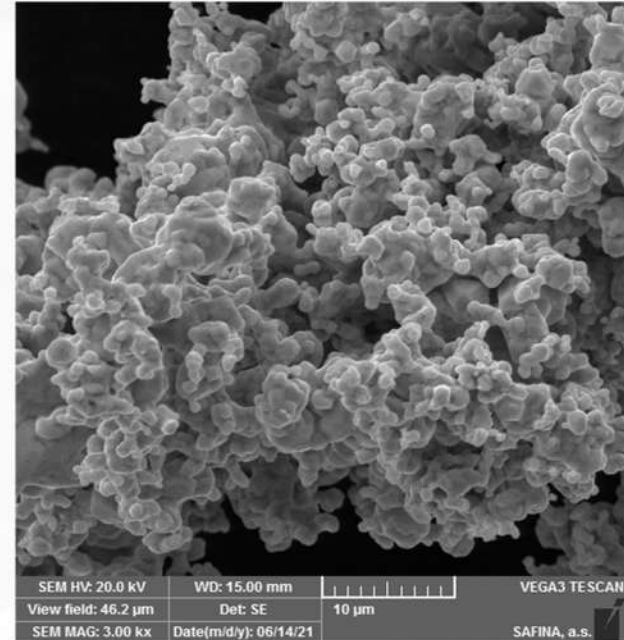
Chemically Precipitated Silver Powders

Safina presents a complete line of high purity, chemically precipitated silver powders that can be modified according to customer requirements. Powders are commonly used for both fired and non-fired applications such as microelectronics, photovoltaics, for use in carbon brush bodies, wearables and much more.

Remarks:

- controlled particle structure and distribution
- stable production quality
- customized powder properties
- recycling of scrap, final or failed products

D10	D50	D90	D100	AD	TD	Chemical purity
μm	μm	μm	μm	g/cm^3	g/cm^3	%
5-10	18-27	35-46	71	1,0-1,4	2,0-2,4	≥99,9
7-12	28-35	57-67	140	1,0-1,4	2,0-2,4	
10-13	25-40	55-80	140	1,3-2,0	2,4-3,2	



Further Products:



Labware



Sputtering targets



Sheets



Brazing materials



Products for glass industry



Evaporation materials



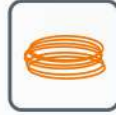
Tubing and thimbles



Contacts



Thermocouples wires



Wires



Chemicals



Jewelry

And Services:



Recycling



AM&Spraying



Calibration laboratories



Services for sputtering targets



Destructive and non-destructive cleaning



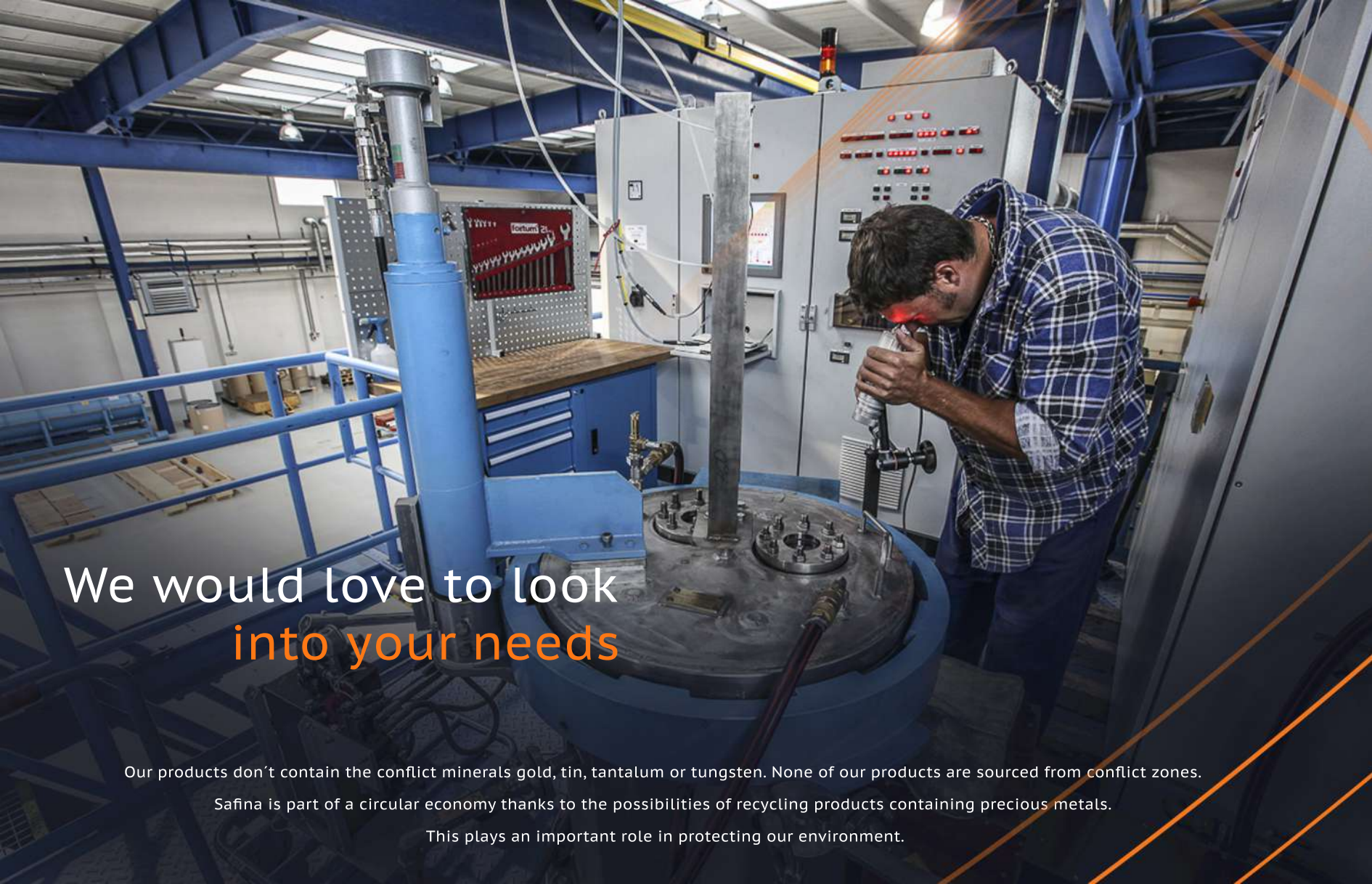
Surface treatments



Purchase of precious metals



Customized development of precious metal and non-ferrous alloys



We would love to look into your needs

Our products don't contain the conflict minerals gold, tin, tantalum or tungsten. None of our products are sourced from conflict zones.

Safina is part of a circular economy thanks to the possibilities of recycling products containing precious metals.

This plays an important role in protecting our environment.

Safina has implemented and maintained a quality management system in accordance with the ISO 9001 standard since 1997 and an environmental management system in accordance with the ISO 14001 standard since 2005.



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