



EXCELLENCE IN PRECIOUS METALS



METALOR[®]

MAKING VALUABLE TECHNOLOGIES BETTER



METALOR TECHNOLOGIES SA

Metalor Technologies SA is an international Swiss-based group and a leading participant in the field of precious metals and related technologies. Founded in 1852 as a preliminary rolling mill and producer of semifinished precious metal products for the watch-making industry, Metalor began to offer products and services to other industries in 1950.

The knowledge and processes which Metalor has developed over the years, the exceptional quality of its products and its ability to anticipate market trends and requirements, have earned the company a reputation for excellence all over the world.

Approximately 1,350 employees work to further and support the group's interests in 14 countries on four continents. Metalor manufacturing facilities are located in Switzerland, Germany, France, The United States of America and The Peoples Republic of China. Sales offices provide customer support in all major European countries, in the Asia Pacific region, the USA and South America.

Four operating divisions serve the requirements of specific markets.

REFINING

Processing and recovery of precious metals and the manufacture of ingots.

ADVANCED COATINGS

Innovative solutions in the areas of plating, powders and flakes, and sputtering targets.

WATCHES AND JEWELRY

Precious metal alloys for the luxury watch and jewelry industries.

ELECTROTECHNICS

Transformation of silver alloys and pseudo alloys into electrical contacts.

ADVANCED COATINGS DIVISION

The division's core business activities focus on the application of metallization technologies to enable and support customers operating in markets as diverse as general electronics, semiconductor applications, decorative and multi-disciplinary (medical, advertising, etc.) industrial sectors.

Manufacturing and Environmental Management

In addition to the headquarters and manufacturing facilities in Switzerland (Neuchâtel and Marin), there are production sites in the USA (Attleboro and North Attleboro), France (Oullins) and China (Suzhou). All key facilities are ISO 9001 accredited and operate

according to best practice standards with respect to health & safety and environmental matters (ISO 14001 in Switzerland, UK and China).

Research & Development and Technical Support

By understanding specific customer applications and requirements as fully as possible, our R & D and technical service teams provide enabling technology either by evolutionary development (customization of products), or by using fundamental knowledge to develop new products.

We support our customers by working together in collaborative partnerships enabling us to move forward together as markets and technical requirements change. R & D operations are located in Europe, the USA and the Asia Pacific region to provide advice and assistance and enable us to form strong and lasting relationships with our customers.





PLATING

We are a leading supplier of precious metal plating products and processes, both electrolytic and electroless, which are developed to meet the demands of the electronics, semiconductor and decorative industries. They are designed for use with high speed, reel-to-reel, barrel, rack, vibratory and semiconductor metallization equipment.

We offer a complete service from the supply of metal replenishment salts and anodes through process chemistry to the refining of spent solutions and scraps. This provides a “one-stop-shop” enabling customers to reduce complexity and the number of suppliers.

Our technical service team is located across our worldwide facilities. Its specialists are on-call and equipped to provide both rapid response to specific queries and on-site installation support. Your local contact will activate global technical resources.

As distributor for N.E. CHEMCAT in Europe, the USA and the Asia Pacific region*, we are able to draw on the product portfolio, experience and technical resources of a capable partner and pass on the benefits of this alliance to our customers. N.E. CHEMCAT is the exclusive distributor for Metalor Advanced Coatings in Japan and South Korea.

POWDERS AND FLAKES

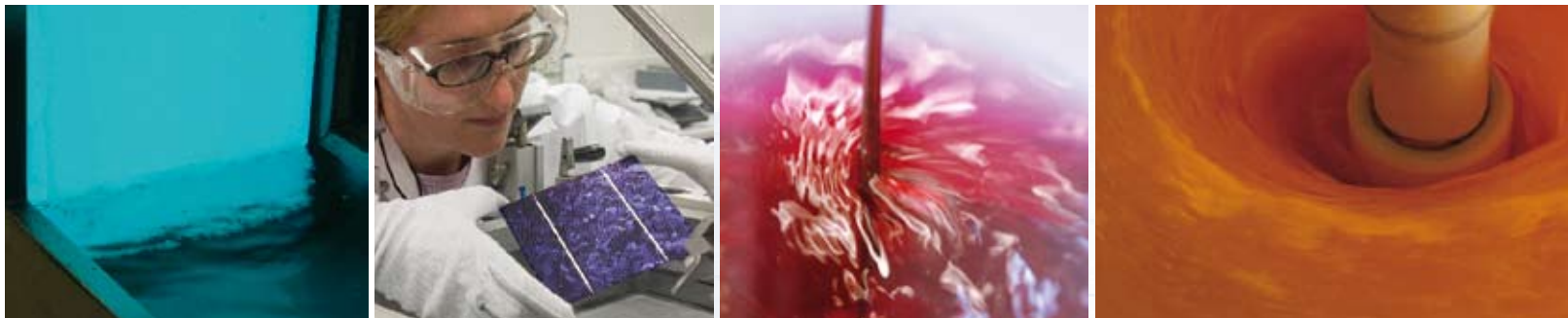
We supply a comprehensive range of leading-edge materials to meet the demanding requirements of the semiconductor, renewable energy (photovoltaics) and electronic industries. Metalor products are acknowledged worldwide by formulators of conductive die attach adhesives, inks and pastes that serve a variety of electronic applications.

The Advanced Coatings Division produces precious metal powders and flakes with various particle sizes, surface areas and morphologies using chemical, electrochemical, or mechanical means. These powders are of high purity, have well-defined particle size distributions, are highly de-agglomerated and they disperse easily.

Based on our powder and flake technology we produce:

- Customized flakes for electrically and thermally conductive die attach and adhesives for microelectronic applications.
- Silver powders and flakes for ceramic interconnect, low temperature co-fired ceramic (LTCC) fabrication and passive component termination.
- Specialty silver powders and flakes for polymer thick film (PTF), membrane touch switches (MTS), RFID antennas and printed electronic (PE) applications.
- Engineered silver powders and flakes for the rapidly growing photovoltaics/ solar cell market place.
- Silver powders for sprayable inks, formable gaskets and other shielding materials.
- A variety of materials via joint development programmes for custom applications, including, but not limited to, the use of emerging technologies for display requirements.

* Exclusive, excluding Japan and South Korea



CHEMICALS AND COMPOUNDS

We manufacture precious metal salts, solutions, anodes and crystals from silver, gold and platinum group metals. These products are used for a variety of purposes in the chemical, petrochemical, automobile, pharmaceutical, plating and electronics industries.

TARGETS

We produce targets for Physical Vapour Deposition (PVD) and in particular for sputtering as well as slugs and wires for evaporation. We provide high purity materials in gold, silver, platinum and palladium for high-tech applications. Our key markets are the optical data storage, the microelectronic and the wear and decorative coatings sectors.

TECHNOLOGY PRODUCTS

This department is dedicated to emerging technologies and the commercial introduction of innovations based on our core competences in metallurgy and the inorganic chemistry of precious metals. It is currently focussing on the following activities:

ELECTROLUMINESCENT PASTES

We develop and produce components for cost-effective manufacturing of high performance electroluminescent lamps. The electroluminescence range is marketed under the brand name Briflex[®] and consists of two key components; a superior electroluminescent paste system as well as advanced electroluminescent manufacturing know-how and technical support.

Market segments include automotive, aviation, electronics, shop/exhibition construction, furniture, architecture, sign marketing, advertising, clothing and safety applications.

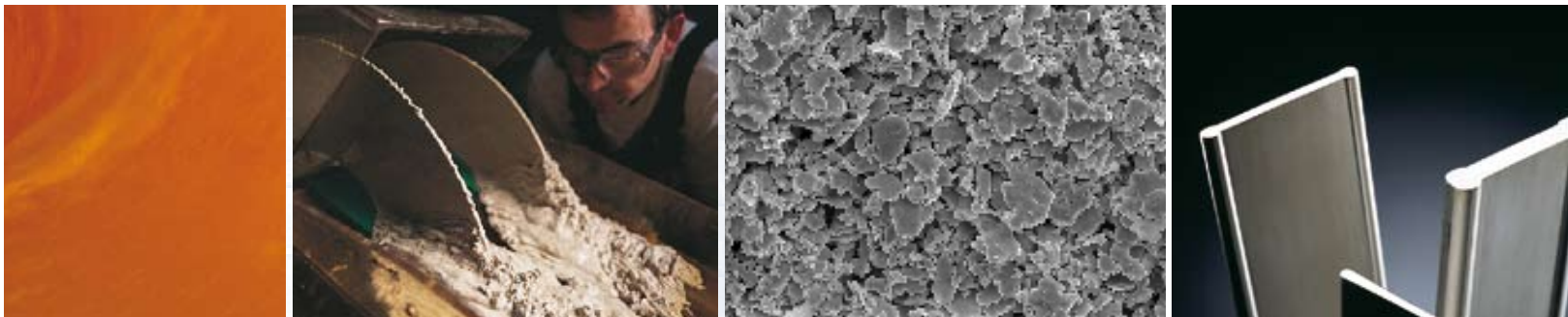
PHOTOVOLTAIC/SOLAR METALLIZATION PASTES

Based on our proprietary and leading technology in precious metal powders and flakes, we develop and produce screen-printing pastes for rear-side and front-side metallization of crystalline silicon photovoltaic cells. In collaboration with leading photovoltaic (PV) producers and research institutes, Metalor develops high performance paste systems and environmentally friendly materials. Among our new products, we offer lead-free pastes based on silver and aluminium.

NANOTECHNOLOGY

We develop and provide gold and silver as nanoparticles, colloids and conjugates for specific applications in the diagnostics and electronics industries. Proprietary manufacturing processes have been developed, through which an effective control of particle size, morphology and dispersion properties is achieved. Special attention is also given to ensuring cost-effective production routes, allowing customers to deliver competitive nano-enabled products to their markets.





DISCLAIMER

This data sheet provides information concerning the properties, composition and use of Metalor's products. The information is provided solely as a convenience to customers. Neither this data nor any advice concerning the selection and/or use of any product shall constitute a warranty of any type, whether express or implied.

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