



Triboloy – Conductive. Smooth. And beautiful.



Various mechanical and electrical components coated with Triboloy.

Triboloy is a galvanic duplex layer consisting of a hard, corrosion-resistant base and a thin gold layer, plus a system-specific thermal treatment. Triboloy has similar properties to gold-plating, conforming to MIL-C-45204 TYPE II Grade C Class 1.

Development

Triboloy was improved on the basis of a tribological study at CSEM*.

In comparison to normal gold-plating, significant gold savings are possible whilst retaining the same performance in electronic contacts. Despite the thin gold layer, this coating guarantees long service life and provides a lubrication effect of hard-soft type in the interface thanks to the double layer system. The excellent tribological properties of this system are based on a principle already proven in nanotechnology. Indeed, the tribological properties of a gold layer 100–200 nm (nanometre) thick are completely different to those of a thicker gold film.

Dislocations, caused by friction wear, are immediately removed from the coating and this therefore avoids brittleness in the coating caused by cold deformation. The corrosion and wear resistance are provided by the

base layer, while the thin gold layer guarantees a small electrical contact resistance.

In traditional coatings, the thick gold layer alone must guarantee these three properties.

Properties

Hardness [HV _{0.05}]	600 HV **
Wear resistance	Excellent: no measurable wear with the ball-on-disc test after 1000 cycles with a load of 1 N
Wear rate in sliding behaviour	10 ⁻¹⁵ m ² /N
Coefficient of friction	< 0.2
Corrosion resistance	> 96 hours salt spray mist to DIN 50021
Electrical contact resistance	< 10 mΩ with 1 N load
Solderability	Very good: 0.6 sec. wetting time measured with meniscograph
Special properties	Non-magnetic

** The layer can be hardened up to 1000 HV on request.

Applications

- > Clock industry: in systems with high tribological requirements, where good sliding and wear properties are necessary.
- > Advantages: extremely uniform layer distribution; thin layer with golden, aesthetic appearance; excellent dry lubrication, above all in contact with steels containing chromium.
- > Contact industry: economic alternative to commercial contacts in the sector of weak current engineering. Suitable for both plug-in contacts and sliding contacts.
- > Other advantages: less gold consumption; loading up to max. 2 Amp. per contact point; thermally resistant up to max. 100 C°.
- > Corrosion protection – non-magnetic

As you can see, the Triboloy coating process is very versatile. It may also be able to resolve one or two problems for you. We will be glad to advise you. We are here for you, and cracking technical cases is fun for us.

* Centre Suisse d'Electronique et de Microtechnique in Neuchâtel