

PLATING INFORMATION

We are your plating technology specialist and your competent partner for developing and applying proper coatings for specific uses and conditions. This section explains the metallic plating used for the different HUBER+SUHNER connectors.

The demands towards connector platings are multiple, such as:

- > add conductive material to supply sufficient current carrying capacity (good electrical and thermal conductivity)
- > diminish or eliminate surface oxidation/corrosion and provide protective coating over conductors
- > provide good contact between conductors
- > achieve a good solder or weld attachment surface
- > obtain a better wear resistance (abrasion resistance and hardness)



Our main platings are

- > gold
- > silver
- > SUCOPLATE® (H+S plating)
- > SUCOPRO (H+S plating)

Gold

Gold (acc. to MIL-G-45204C Type II) is a precious metal available either as soft fine gold or as hard version. It is a good heat and electricity conductor and unaffected by air and most reagents, which makes it a superb material for electrical signal transmission. Gold can be deposited on nickel or copper. It is quite expensive compared to other plating materials

Application

The major use of gold in RF applications is for plating. Inner conductors are frequently gold-plated when e.g. good conductivity, excellent oxidation resistance and continuous mating (repeatability) are required (e.g. in defence applications). Even in highly polluted atmospheres, a gold surface will be free of oxide.

Gold offers the following main advantages:

- > excellent wettability / solderability
- > excellent protection against corrosion
- > low contact resistance
- > good wear resistance

Color: ► gold colored



Silver

Silver is often used for the plating of coins. It is a little harder but also cheaper than gold. Its excellent electrical and thermal conductivity makes it very suitable for surface plating. Silver is used in RF applications for making solder, brazing and sliding contacts. Having the best conductivity of all metals also means that this metal can carry a high current load with the least loss. This characteristic is particularly advantageous when a low passive intermodulation product is desired.

Other features of silver are that it is easily shaped, provides very good heat conductivity, good corrosion resistance in air and water and - in addition - the lowest contact resistance. A disadvantage is that silver tarnishes (creates an oxide film on the surface) when exposed to ozone, hydrogen sulphide and sulphur. Tarnishing does not have any influence on the electrical performance.

Application

Silver is the standard plating for connector bodies and inner pins of 7/16 connectors. Traditionally, silver plating is well-known as a very good plating for low passive intermodulation components.

Thanks to its good solderability, silver is used for soldering ferrules and cable entries.

Silver offers the following main advantages:

- > excellent electrical conductivity
- > good corrosion resistance
- > low contact resistance
- > good solderability
- > good passive intermodulation properties

Color: ♦ silver colored



SUCOPLATE®

As one of the leading RF connector manufacturers, HUBER+SUHNER has delivered several hundred million coaxial connectors with SUCOPLATE plating to demanding customers worldwide. These components, featuring unique mechanical and electrical properties, are used in a wide range of applications such as off-shore, airframes, space, test+measurement, telecommunications and wireless.

SUCOPLATE is a copper alloy composed of three components: copper, tin and zinc. Being non-magnetic and non-allergic (nickel-free), SUCOPLATE is an attractive alternative to nickel plating.

It has a good electrical performance and corrosion resistance. The non-magnetic property in the contact area is also important for obtaining negligible passive intermodulation products (PIM) in communication systems such as base transceiver stations. SUCOPLATE performs just as well as silver, as it has a PIM level of less than -155 dBc.

SUCOPLATE offers the following important performance highlights:

- > superior electrical conductivity and low contact resistance
- > non-magnetic
- > excellent passive intermodulation performance equal to silver
- > uniform plating thickness
- > high abrasion resistance
- > low surface friction
- > excellent adhesion and ductility (no cracking when bending parts)
- > tarnish resistant
- > high corrosion resistance
- > nonallergic

Color: ➤ similar to stainless steel



SUCOPRO - THE GOLD PLATING FOR THE FUTURE

SUCOPRO is a thin gold plating developed by HUBER+SUHNER, featuring a nickel-phosphorus alloy (13 % phosphorus) underlayer.

Below 300 °C the NiP is amorphous and non-magnetic. The gold layer - which is not subject to oxidation itself - protects the nickel-phosphorus underlayer against oxidation, thus allowing good wetting while soldering. It provides stable, low contact resistance and improved protection against oxidation and corrosion. As it contains only a thin layer of gold, the solder joints will not become brittle.

The nickel-phosphorus layer provides very good corrosion resistance, high wear resistance and hardness, and a diffusion barrier against gold, copper, tin and zinc. Between 300 °C and 500 °C, it changes its structure to microcrystalline and its hardness increases, but no brittleness or weak adhesion occurs.

Application

Initially, SUCOPRO was developed for piece parts which demand an excellent solderability and/or wear resistance, means PCB-connectors and adaptors. But more and more customers select this plating also for cable connectors and adaptors.

Meanwhile, SUCOPRO is an excellent plating for almost all subminiature connectors.

SUCOPRO plating offers the following main advantages:

- > excellent wear resistance for more than 1000 mating cycles
- > non-magnetic
- > excellent corrosion resistance
- > excellent wettability / solderability
- > very high strength of soldered joints without embrittlement
- > low contact resistance
- > good passive intermodulation properties

Color: ➤ gold colored

