

Silver plating RF components



Sometimes RF circuits need silver plated components such as coils, capacities, printed circuits, etc. RF currents move at the outside of the conductor due to the skin effect. Copper conductors oxidise after a while. The result of this is a reduction in conductivity. Silver plated conductors oxidise too, but suffer not from a reduction in conductivity.

There are several ways to silver plate copper or brass components: by electrolysis or chemical.



Electrolysis on already etched printed circuits is not the best way to achieve the desired result and most other solutions depend on very poisonous chemicals such as cyanides and the deposited silver coating, for instance, is not strong enough to withstand the heat of a soldering iron. After some experimentation, and with some professional advice, here is a formula that has no poisons such as cyanides in it. This does not mean that one can drink it, but it is much safer to use.

The formula:

(for 50 millilitres solution: recalculate for bigger quantities. With this quantity of solution one can easily silver plate 4 two sided euro cards [$\approx 4 \times 2 \times 10 \times 16 = 1280 \text{ cm}^2 \approx 200 \text{ inch}^2$])

- 50 ml demineralised water (**H₂O**)
- 2 gr. silver nitrate (**AgNO₃**)
- 1 gr. ammonium chloride (**NH₄CL**)
- 5 gr. calcium carbonate (**CaCO₃**)
- 4 gr. natrium tiosulphate (**Na₂S₂O₃**)

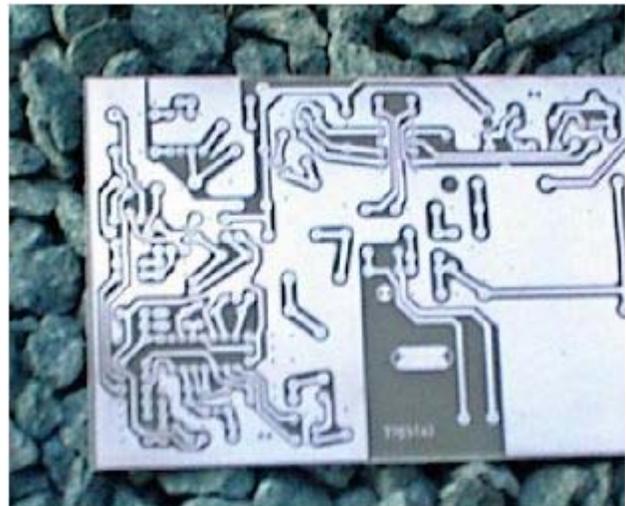


How to make the solution:

- Dissolve 2 grams of silver nitrate in 50 ml demineralised water.
- Mix 1 gram of ammonium chloride 5 grams of calcium carbonate and 4 grams of natrium tiosulphate in a mortar and add to the solution. The calcium carbonate is only needed when one wants to rub an object with a cloth instead of dipping it in a tank.

Usage:

- One can silver plate copper, brass or zinc objects.
- Clean the object you want to silver plate thoroughly with an iron cloth (a heavy oxidised object can be cleaned with nitric acid, which is poisonous, be aware of it)
- Drop the object in a tank with the solution for about 2 minutes (or rub it in with a cloth drenched in the solution for a few minutes).



<http://www.on7lr.org/special/ag/ag.htm>

All the stuff one needs can be obtained at every druggist shop. To polish the silver plated object use a flannel cloth drenched in alcohol or apply a metal polish.

Further info can be obtained at on4awu@on7lr.be

50 ml

2 gr. silver nitrate (AgNO₃) nitrate d'argent
1 gr. ammonium chloride (NH₄CL) chloride d'ammonium
4 gr. natrium tiosulphate (Na₂S₂O₃) thiosulfate de sodium

1 liter = 1000 ml

40 gr nitrate d'argent (AgNO₃)
20 gr chloride d'ammonium (NH₄CL)
80 gr thiosulfate de sodium (Na₂S₂O₃)

1.5 liter = 1500 ml

60 gr nitrate d'argent (AgNO₃)
30 gr chloride d'ammonium (NH₄CL)
120 gr thiosulfate de sodium (Na₂S₂O₃)

1 quart = 0.94 liter