



# 新榮科技公司

## SUN WING TECHNOLOGY COMPANY

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### Anti-tarnishing Agent for Silver and Gold

This Anti-tarnishing agent is a revolutionary molecular technology product. It does not have unpleasant smell and is free of particles and heavy metal ions. Special Bio-polymers adsorb onto the silver or gold alloy surface and bond up to a few nanometer-thick protective layer to protect it from tarnishing. This protective layer is optically invisible, chemically inert, dirty-proof, oil-proof and waterproof. It may resist scratching to some degree. It is suitable for application to gold alloy (like rose gold) and silver jewelry. Owing to its conductivity and solderability nature, it is also suitable for application in electronics industry, e.g. PCB.

#### **Advantages and Application:**

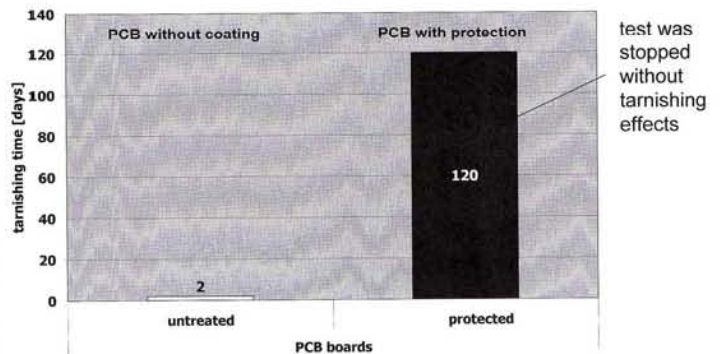
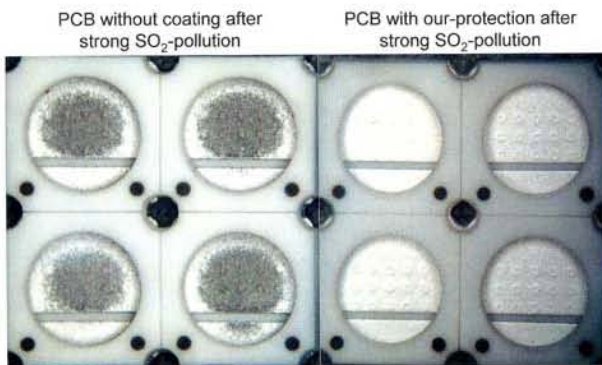
##### Jewellery application



The upper chain was protected by our anti-tarnishing agent while the lower by conventional protection as known in the jewellery industry. Both chains were tested under the same conditions in 2% ammonium sulfide solution. The upper chain had no discoloration while lower chain was blackened. It proves our anti-tarnishing agent is more superior than conventional anti-tarnishing.

##### Electronics industry

##### **PCB**



PCB at LHS is not protected while PCB at RHS is protected by our anti-tarnishing agent. They were tested in the same conditions under strong SO<sub>2</sub> pollution. The one without protection becomes black after SO<sub>2</sub> pollution but the one protected with our anti-tarnishing agent is still white. From the above chart, it shows that PCB without protection is only stored for two days while PCB protected with our anti-tarnishing agent is stored for 120 days without tarnishing effect. The test was stopped after 120 days.



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### Operating Instruction – Anti-tarnishing Agent for Silver and Gold

#### Bath and Coating Parameters

- Concentration: 10 ml/L Anti-tarnishing agent
- Bath temperature: T = 45-55°C
- Avoid long contact with non-noble metals like stainless steel.
- Coating time: t = 3-5 min
- Light movement of items in the bath

#### Bath Container

The bath container should be made of synthetic material like Polypropylene (PP). Stainless steel should not be used.

#### Bath Heater

Bath heater as used normally in the electroplating industry. It should be free of stainless steel.

#### Bath mixing

First warm up the delivered concentrate to approx. 45°C at strong shaking. Then fill the concentrate (at 10ml/L) in a warm water bath heated to 45 °C. The coating bath is ready to use when a nearly clear solution is achieved. The concentrate may not be filled coldly into the water bath.

#### Coating Process

An electrolytic degreasing of the items should be avoided before dipping into the anti-tarnishing agent. This could lead to insufficient protective results. If electrolytic degreasing is needed, the items should be treated in a sulphuric acid before dipping in the anti-tarnishing bath!!!

1. Dip the water rinsed silver or gold surface for 5 minutes into the anti-tarnishing bath.
2. Wash up in clear cold distilled water for 10-20 seconds
3. Wash up again in another clear cold distilled water for 10-20 seconds
4. Rinse into hot water at about 60-70 °C for 10-20 seconds (This step is very important!)
5. Now the items are nearly dry and very waterproof. Isolated drops of water can be blown off with hot air (T~60°C) or they can be dried in the stove at about 60°C

#### Bath maintenance

- Every 2 weeks, the coating bath should be refreshed with supplement solution.
- Before adding the supplement-concentrate the bottle should be warmed up to T=45°C and filled into the warm water bath.
- It is recommended replace the bath after four-week usage or whenever it becomes black.

#### Disposal

The bath solution can be treated after cooling using active carbon powder for disposal. You must take care about your wastewater collection and disposal rules/regulations.