



LANGFORDS  
SINCE 1937

# AGERE ANTI-TARNISHING TECHNOLOGY

TECHNICAL SHEET

**INTRODUCTION**

Commercial items sold are normally either ‘solid silver’ (925 parts of silver per 1000) where it is mixed with an alloy to help strengthen. Alternatively, items are ‘silver plate’ where a thin layer of silver (measured in microns) is adheres to an underlying metal surface, such as copper, brass or aluminium. All silver and silver plate will oxidise and tarnish.

Agere’s patented process is an anti-tarnishing technology for solid, or plated, precious metal alloys of silver, gold or palladium and proven to keep surfaces shining bright for years.

This is nano-molecular technology that revolutionises the use of these metals. It provides a protective layer of nano-molecules that are resistant to the most aggressive oxidising agents.

**THE TREATMENT**

Consists of bonding nano-molecules through a chemical reaction (non-electrolytic) taking place in specific tanks, resulting in a nanometric layer of molecules.

The chemical reaction generates a strong bond between every single surface molecule of gold, silver, palladium, etc. and the ‘Agere’ molecules. The bond has the strength to resist aggressive tests.

The process is completed in three phases:

1 <sup>st</sup> Phase	Items are treated in a process lasting 50 minutes, during which time the chemical reaction generates the chemical bond.
2 <sup>nd</sup> Phase	The items are rinsed in a process lasting 10 minutes. This eliminates the nano-molecules attached, but not bonded, to the surface.
3 <sup>rd</sup> Phase	Items are dried in a process lasting 10 minutes to dry them.



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The process takes place in a machine specifically developed and patented by 'Agere Srl'. It is carried out in a nitrogen inert atmosphere and then goes through the process of different tanks, as previously stated.

The chemical compounds used for the first two processes are non-polluting and do not contain any hazardous substances, thus making it compliant with the EU Regulations for 'RoHS' & REACH.

**RoHS** - The Restriction of Hazardous Substances

**REACH** - Registration, Evaluation, Authorisation and Restriction of Chemicals

This treatment has also been tested for compliance with the EU Food & Beverage regulation, specifically: Food Contact Materials Regulation (EC) 1935/2004s in respect of non-transmission of metals, flavour, taste or odour.

## **WHICH METALS CAN BE TREATED**

Agere's treatment can be applied to any object with a gold, silver or palladium alloy surface:

- **Solid gold, silver, or palladium etc.**
- **Objects plated in gold, silver, or palladium etc.** Objects whose base metal can be brass, copper, aluminium, zamak, rhodium, ruthenium, platinum, covered with a micrometric layer of gold, silver, or palladium etc.

## **WHAT PROBLEM DOES IT SOLVE?**

The Agere process performs as:

- An **anti-tarnishing inhibitor** (anti-sulphurisation) for gold, rose-gold, silver etc.
- **A Replacement for lacquering type of coatings.** For example; 'Monarch Plating' which yellows over time and then cracks, causing tarnishing under lacquer.
- A smoothening factor for silver or gold clasps, locks, or tight mesh chains, necklaces etc.
- **Mechanical protection** to improve the duration of the gold, silver or palladium plating, although it is not to be confused with armour-plating.

## **THE BENEFITS**

Customers benefit from Agere's protection with respect to:

- **Non-tarnishing silver**, even when exposed to:
  - Heat, humidity, pollution
  - UV rays in shop windows or under the sun
  - Contact with salt, creams, alcohol (perfumes), mustard etc.
- **Rose/pink gold not changing colour**, even when exposed to the above
- **Satin finished yellow gold not accumulating dirt**
- **Jewellery**
  - Necklaces & bracelets run smoothly and feel more silky in the hand.
  - Clasps will not be stiff

Tests are not only limited to laboratories but also over years in real life situations.

## **SPECIFIC TESTS**

This technology is the result of years of research & development in the Department of Nanotechnology at the University of Bicocca in Milan

<b>Test</b>	<b>Parameters</b>
Accelerated Aging	'Thioacetamide' up to 72h
Heat Resistance	Up to 210°C for 30 days
Electrical Conductivity	0.0158 Ohm
Resistance to Wear	Manipulation, banging, 5' turbine
Salt Mist Spray	Up to 96h
Artificial Sweat	Up to 24h
Damp Heat Test	Up to 96h
Humid Leather	Up to 96h
Xenon Lamp Test	Up to 50h
Conformity to Food & Drink Regs	Non-transmission of metals, flavour, taste, odour
Non Allergic	Hypo-allergenic
Resistance to Detergents & Dishwasher	Including industrial detergents

**THE PROCESSING CENTRE**

