

Looking after silver

This sheet explains how to clean silver and how to slow down the corrosion process.

Silver components

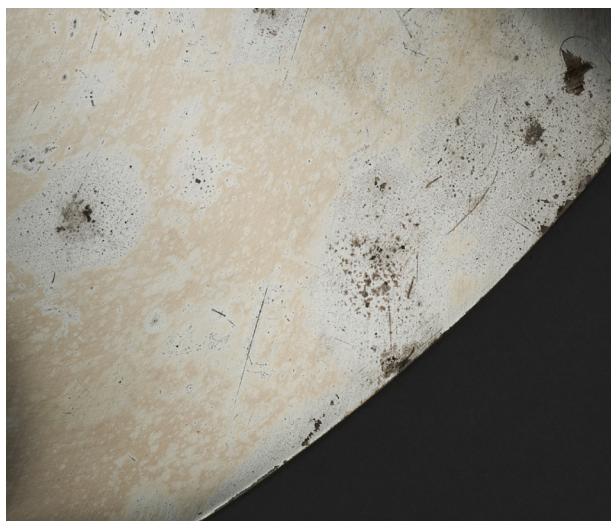
Silver is a white metal that is quite soft and versatile. It is too soft to be used in its pure state so it is often plated onto other metals, almost always with a layer of copper in between. Sterling silver is always 92.5% silver and 7.5% copper alloy. 'Sheffield Plate' is the earliest form of silver-plating, which developed in England around 1742. This was largely replaced by electroplated silver (EPNS) in the mid 1800s which used less silver. Silver can also be plated with gold, alloyed with other metals or inlaid with materials such as gems, wood or ivory. It can be shaped by hammering, turning or casting into intricate shapes and it can be engraved. Hallmarks or other stamped marks underneath a silver object will help you recognise if your object is sterling or silver-plated.

Silver damage and how to reduce it

1. Touching silver

Salts and grease in our skin are highly corrosive to metal. Fingerprint marks on metal can become corrosive and are difficult to remove. It is best to handle metals with clean cotton or disposable vinyl gloves to stop oils from hands passing onto the metal.

These photos show how the grease and salts from a person's fingerprints can react with the silver and become tarnished. If left for a long time, the fingerprints become etched onto the surface and are impossible to remove.



2. Rough handling

Silver is a soft metal which can be dented or damaged when handled roughly. Silver abrades easily and shouldn't come in contact with other materials. It is easy to damage raised areas such as handles or feet of metal objects. Handles can often be weaker or more brittle than they appear so it is advisable not to pick up a silver item by the handles. When moving an item, wear gloves and use two hands around the body of the object.

3. Tarnish from acids and materials that contain sulphur compounds

Tarnish is a corrosion process known as black silver sulphide. It appears as a gradual discolouration from yellow or pink, to brown, dark grey then black. It also causes silver to lose its sheen. Tarnish can also be green if the silver is made from a copper/silver alloy.

Many gasses and materials cause silver to corrode. It corrodes when it comes in contact with water and/or high humidity, dust, acids (commonly from fingertips), salts, oils and some metal polishes. It can also be caused by sulphur compounds in the air (hydrogen sulphide) which are found in car exhausts, rubber products, cigarette smoke and other pollutants. Wooden cabinets and wood products such as plywood, chipboard and custom wood contain formaldehyde which will cause silver to corrode. Protein based materials such as wool, felt, silk and leather also contain sulphur compounds that are harmful to silver. Acids from cardboard, paper, plastics such as PVC and

polyvinyl acetate and some food (eg mayonnaise, salt, egg) can also be harmful to silver.



This is an example of tarnished, silver-plated metal, caused by gases emitted from formaldehyde which is used in modern timber storage cabinets.



Salt residue has corroded this silver salt container.

4. High humidity

Silver objects on open display or storage shelves will collect dust from the air. In a damp environment (over 60%), fine dust will absorb moisture from the air and will start to corrode the silver. Avoid storing objects in damp storage conditions such as basements. Increasing ventilation will help reduce humidity or you can use dehumidifiers or air-conditioning to limit moisture in the air. Use a soft, clean, lint-free cloth or a very soft hairbrush to keep silver dust-free and not vulnerable to tarnishing.



This photo shows fingerprints on the body of the jug. The dust on the lid has absorbed moisture and caused spot corrosion areas.

5. Abrasive polishes

A lot of silver damage happens when people try to remove tarnish with polishing creams, wadding and rouge sticks. These products contain abrasive compounds as well as corrosive hydrochloric or sulphuric acids. They will remove much more of the silver surface than a silver cloth or silver dip will. Over time and with repeated cleaning, they will leave fine scratches on the surface, will wear away the silver and can diminish engraved decorations or inscriptions. Over-polishing plated silver will actually remove the silver-plating which will expose dull areas of base metal that can be mistaken for tarnish. It is also advisable not to use brass or chrome cleaners on silver. Harsh chemicals and abrasives needed for cleaning copper or brass will damage silver. Do not consider using electrochemical cleaners either as they deposit a layer of another metal on top of the original surface, which will then be irretrievably lost.



The green, crusty corrosion on the silver coffee jug has been caused by silver dip not being removed properly. The silver dip soaks into the crevices and causes continuous corrosion. Polish residue in crevices hardens over time and becomes difficult to remove.

6. Coatings

Coating silver objects to prevent tarnishing is not encouraged. Contact a metal conservator if you are thinking of taking this option.

7. Poor storage materials

Because of the sulphurous content of many storage materials, it is advisable to store metal objects in an environment that is free of dust, is well ventilated and dry.

Recommended storage materials for silver

- Use sulphur absorbing materials such as activated charcoal cloths or silver impregnated cotton bags to slow down tarnishing in storage areas.
- Use stable materials such as washed cotton or linen cloths or old sheeting to wrap your silver in or put large objects under cotton dust covers.

- Small silver can be wrapped in acid-free tissue and placed in polyethylene (ziplock) bags.
- Metal shelving and cabinets are preferable to wooden shelving.
- Internal wooden shelving and cabinets should be sealed with good quality water based paint (leave enough time for paint to dry and off-gas thoroughly) to stop harmful emissions, such as formaldehyde being released from the wood. The internationally recognised time for off-gassing of volatile organic compounds (VOCs) is three weeks.
- An alternative way of sealing wood is to use a barrier foil (cover edges).
- Use moisture absorbing materials to buffer humidity changes, such as: acid-free tissue paper, acid-free boxes or washed, natural fabrics.

Recommended display materials for silver

- If possible, use metal showcases with stable coatings such as powder coated enamel.
- If using wood, seal it with good quality water based paint, leave three weeks for paint to dry and off-gas thoroughly).
- Another method to stop wood from off-gassing is to place a barrier over it such as foil or mylar before covering it with a display fabric.
- Use washed, undyed or colour-fast, natural fibre fabrics such as cotton and linen to line the display boards. Do not use wool or felt as they contain harmful sulphur compounds.
- Use moisture absorbing materials to buffer humidity fluctuations in the display case, such as acid-free mount board or natural fabrics.
- Use sulphur absorbing materials, such as activated charcoal cloths in display cases.



Unlike the body of this jug, the bottom rim has not been affected by atmospheric pollutants and fingerprint greases and salts. This shows it has not been displayed or stored in a good environment.



Once they have been cleaned, silver objects can be placed in silver impregnated cloth, ziplock or freezer bags for storage.



Activated charcoal cloths absorb atmospheric pollutants and improve the environment inside storage or display spaces. The top right sample is a silver impregnated cloth, the rest are activated charcoal cloths.

How to clean silver

Decide which silver items in your collection are valuable — historically, personally, financially. It is best to have the valuable items treated by a metals conservator. In general, it is not a good idea to routinely polish or aggressively clean metal pieces. Tarnish (silver sulphide) contains silver, so every time it is cleaned a small amount of silver metal is removed along with the tarnish. For your everyday silver items, it is best to keep tarnish removal to a minimum and only use the most mild and non-abrasive methods for cleaning silver.

It is a good idea to make notes and take photos that show what materials and method you used to clean your silver.

Supplies

- Cotton gloves (washed) and/or disposable, vinyl gloves (preferably powder-free) — chemists
- Silver cloths impregnated with tarnish inhibitor and silver foam (available from jewellers or supermarkets, note: they cannot be washed and reused)
- Washed, clean cotton cloths (old sheets)
- Clean water and mild detergent, such as Sunlight soap
- Cotton buds — chemists
- Methylated spirits — supermarkets
- Activated charcoal cloth — Zetta Florence, Archival Survival, eBay
- Ziplock plastic bags or high density polyethylene bags — supermarkets, plastic suppliers, conservation suppliers
- Satay sticks — supermarkets

Please refer to the 'Products and suppliers' information sheet for further details.

1. Cleaning light to medium tarnish removal (for silver that is used regularly)

Use this method when you see the surface of your silver objects looking dull or yellowish.



Wash with a mild detergent such as Sunlight soap in warm, clean water.



Rinse in clean water and dry with a cotton cloth



Wipe with a clean silver cloth (impregnated with tarnish inhibitors) to give a preventive coating to your object. Ensure both dust and grease are removed before buffing with silver cloth as they could scratch the surface.

2. Cleaning light tarnish removal on composite silver (silver which has bone, ivory, bakelite, wooden handles or other attachments)

When light tarnish removal is required, it is advisable not to immerse composite silver objects in water as they are sensitive to moisture and may discolour or deteriorate. Use cotton buds dipped in methylated spirits to degrease the silver. Wipe with a silver impregnated cloth.



These photos show examples of composite silver objects — a bakelite and silver tea set and an ivory and silver knife set.

3. Cleaning heavy tarnish removal (decorated surfaces may need to be cleaned with a silver dip)



Dampen a washed, soft cotton cloth.



Silver foam contains very fine abrasives, mild soap and chemicals that help remove tarnish. Dip the damp cloth in silver foam.



Rub the silver foam onto the surface of the silver with cloth.



The silver foam can be applied to smaller areas and crevices with a soft brush. Cut the bristles to make the brush stiffer. Put a piece of masking tape around the steel collar of the brush to prevent it scratching the silver during this process.



Rinse off silver foam in a bath of warm clean water. Ensure all the foam and polish residue has been removed from the crevices in your silver. Use a soft brush if needed. Hardened polish residue can be softened with methylated spirits and a satay stick.



Dry with a clean cotton cloth.



Wipe with a clean silver polishing cloth.