

## **Introduction**

Silver objects can be enjoyed and preserved for generations with some basic care and attention. A good starting point is to know a little about the silver objects you own. Silver is a soft, white metal. Too soft to be used in its pure state, silver is usually alloyed with another metal, most often copper. Sterling silver contains 92.5% silver and 7.5% copper. Silver plate contains a layer of silver over another metal. In Sheffield plate, a layer of silver is bonded to copper under heat and pressure. In electroplated silver, a layer of silver is deposited by an electrochemical process developed in the mid-1800s.

## **Causes of Damage**

Silver is relatively soft, and it can be dented or damaged by rough handling. Especially vulnerable are raised areas and handles or feet on silver objects. Too much polishing can also result in a fair amount of damage. It can remove the detail and definition of raised areas in a pattern over time, and can also wear off silver plating — leaving the duller base metal exposed.

Silver is subject to corrosion when it is exposed to sulphur-containing compounds in the air (hydrogen sulphide). This corrosion is known as tarnish, and it causes silver to turn dark and lose its lustrous surface sheen. Some examples of materials that give off sulphur-containing compounds are textiles containing wool, some food (e.g. mayonnaise, eggs), and rubber. High relative humidity increases the rate of tarnishing. Silver becomes vulnerable to tarnishing if old lacquers, applied as a protective surface, peel or wear off over time.

Citrus fruit and other acidic foods will not hurt pure silver. However, they can cause problems for copper, which is used in making sterling silver or silver-plated objects. If the surface of a silver object becomes covered with a green crystalline deposit, this indicates that the copper in the alloy is corroding. This problem should be treated by a conservator.

Harsh detergents will cause pitting on silver. Therefore, do not put silver into dishwashers.

## **Handling and Storage**

It is best to avoid handling silver with bare hands because grease, oil, and salt on your skin can mark the surface. Clean cotton gloves are recommended.

Keep silver objects clean and free from dust and surface grime. Also, tarnish does not need to be removed before storage. It is better to clean it only when necessary — just before use or display.

Wrap silver items in acid-free tissue paper and then in Pacific Silvercloth, which is a soft brown flannel-like cloth that contains small particles of silver (sulphur-containing gases from the surrounding air will react with these small silver particles rather than the silver items wrapped inside). Birks carries Pacific Silvercloth in small quantities. A blue flannel-like polishing cloth that contains a salt rather than silver is also available, but this is not as effective as the brown Pacific Silvercloth. For additional protection, wrapped silver can be placed in polyethylene bags (freezer bags with zip-lock tops work well).

## **Cleaning and Repair**

Before undertaking any kind of cleaning, it is important to check silver objects for hallmarks or other identifying marks that will tell you if the piece is sterling or silver plate. Also look at how the item is constructed. Solder joins or hollow sections in handles or feet mean the

object should not be immersed in a cleaning liquid. The object should also be checked for the presence of gilding or surface inlays.

There are a number of different commercial products available for cleaning silver: cloth, liquid, cream, paste, and foam to name but a few. All of these products contain abrasives. While they are relatively easy to use, they remove some silver along with the tarnish and leave fine scratches on the surface.

Wadding polish is cotton wool or batting that contains an abrasive and is moistened with an organic solvent instead of water. It is useful for objects that should not be exposed to water. However, wadding leaves behind a residue of abrasive particles on the surface that should be removed by rubbing with a soft cloth or brushing with a soft brush.

There are some gentle liquids, pastes, and foams that are sold specifically for cleaning silver. Do not use non-specific, all-purpose metal polishes because these contain harsher abrasives. Be sure to close the containers tightly after use because the cleaner can dry out, making the polish more abrasive. Most commercial silver polishes contain a tarnish inhibitor. While this slows the tarnishing rate for a short time, when objects do start to tarnish they do so unevenly.

Many museums and conservators make their own polishing paste using precipitated chalk (calcium carbonate) and distilled water. However, calcium carbonate is available only at chemical supply houses.

Liquid dip is a chemical mixture that, in theory, attacks the tarnish and not the silver. A dip may not be the best answer for cleaning heavily engraved surfaces because it can remove the darker in-fill on engraving, leaving the surface looking flat. It is recommended that rather than submerging the object in the liquid, the dip be applied briefly to the item with a cotton-tipped applicator. Rinse in distilled water to remove any excess dip and then dry. Prolonged use of dips can lead to surface pitting. Also, they should not be used on silver pieces that have hollow sections (candlesticks or teapots with hollow handles) because once the dip leaks into the cavity, it is virtually impossible to wash it out. Remember, too, that chemical dips are composed of an acid and a complexing agent. Acids are corrosive and will damage niello (a black compound found on incised decorations), bronze, stainless steel knife blades, and organic materials such as wood and ivory. It is important to work in a well-ventilated area and to wear rubber gloves when using dips. If, after cleaning with a dip, there is a slight yellowish cast to the silver, rub the object gently with a silver polishing cloth.

Electrochemical reduction should be avoided. This process uses sheets of aluminum and a warm solution of washing soda (sodium carbonate). The solution acts as an electrolyte. This means that when the silver object comes in contact with the sheet of metal in the solution, the aluminum starts to corrode and emits hydrogen gas that reacts with the tarnish. After the electrochemical reduction, the silver will appear dull and will have to be rubbed with a silver polishing cloth to give it a bright finish. The problem with this process is that you have no control over it. With polish and dips you can stop at any stage, but with this you cannot. Electrochemical reduction can also lead to pitting.

Silver that is used will eventually end up with some scratches and dents. It is generally a good idea to simply accept this cosmetic damage as a sign of character, use, and love. If a major dent occurs on a piece that is frequently polished, prolonged handling will thin the metal and make repairs more difficult. If this happens, consult a conservator about the best course of action.