The Care and Preservation of

Historical Silver

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Introduction

Historical silver can be maintained for years of use and enjoyment provided that some basic care and attention is given to their preservation. The conservation staff at The Henry Ford have compiled the information in this fact sheet to help individuals care for their objects and collections. The first step in the care of all collections is to understand and minimize or eliminate conditions that can cause damage. The second step is to follow basic guidelines for care, handling and cleaning.

Most people know that silver is a white, lustrous metal. Pure or "fine" silver is called "Sterling" if it is made up of no less than 925 parts silver to 75 parts alloy. Sterling will thus often have '.925' stamped somewhere on it, as an identifier. Silver objects, especially coins and jewelry, contain copper as an alloying metal for added hardness. The copper may corrode to form dark brown or green deposits on the surface of the metal. Silver is usually easy to differentiate from lead or pewter, which are generally dark gray and not very shiny.

Silver is often plated (deposited) onto other metallic alloys, almost always with an intermediate layer of copper in between. The earliest plating process, "Sheffield Plate" was developed in England in 1742. By the mid-19th century, the process was largely replaced by electroplating (which used less silver). The base metal in plated artifacts may consist of any of the following metals or alloys: copper, brass, "German silver" or "nickel silver" (50% copper, 30% nickel, 20% zinc), "Brittania metal" (97% tin, 7% antimony, 2% copper), or a "base" silver containing a high percentage of copper. Some base metals contain lead, which can become evident if the object forms a white powdery corrosion product on the surface. Hallmarks or other stamped marks on the underside can usually aid in determining the composition of silver or silver-plated artifacts.

Types of Damage

Silver artifacts are primarily susceptible to chemical degradation due to environmental exposure, in the form of corrosion, and physical damage, from poor handling or storage.

Tarnish (silver sulfide) is a form of corrosion characterized as a dense, thin, black layer that disfigures the surface of an artifact. Silver will tarnish on exposure to air containing sulfide gases. Humidity in the air is also required for the corrosion to progress. Areas with heavy industry and

elevated pollution levels, combined with hot, humid summers, easily meet both of the criteria for tarnish to occur. Tarnish does not itself pose a threat to artifacts, as once the thin, stable layer is formed and there is no longer silver open to the air, further corrosion will not occur. Most damage to silver occurs as a result of the required polishing to remove the tarnish. Over-polishing results in a loss of detail definition in raised areas of design over time. On plated objects, frequent polishing can actually remove the silver plating entirely, leaving dull areas of exposed base metal that may be mistaken for stubborn areas of tarnish. In rare cases where the silver object has been exposed to high airborne salt concentrations, “horn silver” may develop on the surface. This corrosion, silver chloride, is characterized as dirty purple or slate gray. It is dense, compact and usually quite difficult to polish off. Old lacquers, applied in the past to protect the piece, may wear or peel off in some areas. This leaves the exposed silver to tarnish, while the rest may remain bright.

Objects made of silver, a relatively soft metal, can be damaged by rough handling. Raised areas and handles are especially susceptible to denting and joint failure.

Storage

A simple way to preserve fine silver, and to reduce the necessity for polishing, is to store silver properly. Maintaining an even, low humidity where metal objects are kept (ideally below 50% Relative Humidity) will help. In most homes, this is difficult to ensure, but generally speaking, basements are often damp in the summer and, therefore, should not be used for silver storage. Humidity sensors are available through the suppliers listed for those who wish to check conditions near their collections.

Silver tarnish inhibiting cloth (not polishing cloth) is available from better fabric stores for storing silver. It should be wrapped around the silver piece; it protects the object by absorbing tarnishing pollutants before they have the ability to interact with the surface. The wrapped silver may then be placed in a clear bag, preferably made of “Mylar”, or specifically polyethylene (PE) clear plastic. Never use polyvinyl chloride (PVC) plastic bags to store artifacts. Silver kept wrapped and stored properly can be taken out and enjoyed as often as you like with the minimum amount of polishing and trouble.

Handling

Display pieces should be handled with care, lifting from the center of gravity, never by the handle or lip. If historic silver serving pieces are being used, their owners should accept a certain amount of wear and tear from handling and more frequent cleaning.

Polished silver should not be handled with bare hands. Salts and oils from your skin can etch into any polished metal and may even cause permanent damage. Nitrile gloves are preferable for the handling of artifacts, as they protect both the artifact from the wearer and the wearer from the artifact. For silver, it is also acceptable to use soft, cotton gloves, or any clean glove or rag.

Cleaning & Care

Before beginning any treatment of silver, it is important to consider the desired end result. Polishing exposes fresh, reactive metal to the atmosphere and, therefore, to further tarnishing. For silver that is going to remain in storage, it may be advisable not to remove a stable tarnish layer. Silver that is used regularly will stay tarnish-free for longer, as handling wears off tarnish as it begins. Silver that is desired to be shiny but will not be used regularly will need a protective coating to prevent tarnish from reoccurring at a rapid rate.

If tarnish is to be removed, cleaning must begin with the removal of old lacquers. This is best done with acetone, and preferably by immersion. Acetone is a volatile solvent that should never be used in poorly ventilated conditions. (Please consult the manufacturer or Safety Data Sheet for complete safety requirements.)

Polishing with a mild abrasive is the only safe cleaning method conservators can recommend for most historic silver artifacts. Commercially available “silver dips” may contain undesirable components such as hydrochloric or sulfuric acid that act too quickly and remove more metal than simple polishing does. Conservators do resort to special dips in certain, extreme cases, but for most tarnished silver, this method is too aggressive. Silver which has been dipped usually requires further burnishing to restore luster to the surface. Some commercial paste polishes (e.g. “Duraglit”) are quite abrasive and may scratch your fine silver. “Hagerty’s Foam” polish and “Twinkle” for silver are thought to be somewhat less abrasive than others and may be suitable. Light polishing may be done using jeweler’s cloth containing rouge (i.e. “Birk Cloth”, “Hagerty Glove”). The preferred, museum-proven, safe polishing method is as follows: use fine calcium carbonate (also called chalk or whiting), worked into a slurry or runny paste with equal amounts of ethanol (denatured alcohol or ethyl alcohol) and distilled water. The paste is rubbed across the surface working a small area at a time with cotton balls or clean, cotton rags. Detailed areas may be polished with Q-tips or with cotton wadding on the end of a sharpened bamboo skewer. Depending on the design of your object, it may not be desirable to over-clean every crevice, as this decreases the overall contrast of the detailing. It is important to remove all residual polish with distilled water. Drying may be accelerated by adding ethanol to the rinse water, or by giving the object a final wipe with ethanol.

Objects that will not be used can be lacquered for protection. This process involves the use of solvents to clean the metal properly (usually acetone). It also requires spraying on the lacquer. In general, spray lacquering is a task best left to qualified individuals with the background and equipment necessary to do a good job. However, if you wish to attempt to lacquer your artifact, guidelines can be found on U.S. General Services Administration web site in the Historic Preservation Technical Procedures Database at: https://www.gsa.gov/real-estate/historic-preservation/historic-preservation-policy-tools/preservation-tools-resources/technical-documents?Form_Load=88262. It is not advisable to wax polished silver because the effect is too variable - it is difficult to achieve

a continuous, even coat of wax. An uneven coat of either wax or lacquer will leave the surface vulnerable to tarnishing in some areas, called ‘selective tarnishing’, and resulting in an uneven, patchy appearance. Most people who do not have access to professional services must accept the fact that they will have to polish their silver as often as is needed.

Physical repairs to valuable silver, which may involve soldering or raising and reshaping dents, should be done by a qualified metalsmith familiar with historical techniques or an art conservator. In some cases, jewelers may be willing to do small repairs on silver artifacts.

Disaster Response

As with other metals, silver is relatively robust in comparison to other types of artifacts, such as books, paper, and textiles. In the event of a disaster, historical silver’s placement on the salvage priority list may reflect both its stability and its value. It is important that salvage priorities are considered before an emergency occurs. Historical silver will be more vulnerable in disasters such as fires, where extreme heat can cause disfigurement, and water can cause corrosion. When it is safe to perform salvage operations, the salvage of silver generally involves removing it from harm’s way, drying it as best as possible to prevent corrosion from starting, and removing surface contaminants. Further discussion on salvage and disaster response can be found in The Henry Ford’s conservation information sheet on that topic, and in various online resources.

SUPPLIERS

Chalk (Calcium Carbonate or Gilders Whiting)

- Hardware Stores
- Builder's supply companies
- Gilding supply companies, such as:

  Sepp Leaf Products
  381 Park Ave.
  New York, NY 10016
  (212) 683-2840
  https://www.seppleaf.com/

Humidity Indicators

- University Products
  https://www.universityproducts.com
- Talas
  https://www.talasonline.com

Silver Tarnish Inhibiting Cloths

- Good fabric stores
- Jewelry or specialty gift stores

Polishes, Jeweler's Polishing (Rouge) Cloths

- Good hardware stores
- Jewelry or specialty gift stores
- C.R. Hill
  2734 11 Mile Rd
  Berkley, MI
  (248) 543-1555
  https://www.CRHill.com/catalog

Hagerty's Silver Foam
W.J. Hagerty and Sons, Ltd.
http://hagertyusa.com/silver-foam/

Twinkle
Malco Products
https://consumerproducts.malcopro.com/Twinkle__Polish-list.aspx
Available from hardware and home goods stores.

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MacLeish, A. Bruce. The Care of Antiquities and Historical Collections Second Edition. Altamira Press, 1986. ISBN #0761991352.

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Smithsonian Museum Conservation Institute

https://www.si.edu/mci/

U.S. General Services Administration – Preservation Tools & Resources

https://www.gsa.gov/real-estate/historic-preservation/historic-preservation-policy-tools-resources

To Find a Conservator:
The American Institute for Conservation
https://www.culturalheritage.org/about