



BISHOP MUSEUM
Art Conservation Handout

THE CARE OF SILVER

Silver has been used since ancient times in the fabrication of decorative and functional objects because of its working properties and pleasing color and shine. In Europe, however, silver was relatively rare; it was only with the exploitation of mines in the New World that silver became available in large quantities, and the fabrication of things like complete silver services for the middle class was possible, and affordable.

Pure silver is too soft for normal use, and so it is combined or alloyed with another metal for strength. Sterling silver, for example, is 92.5% silver and 7.5% copper. German silver is alloyed with copper, zinc and nickel. Silver objects are stamped with a hallmark, showing that the metal was assayed for its purity; the hallmark identifies the maker as well. If the object is not sterling but silverplate or electroplate, the hallmark will indicate so. Silver plate is made from a base metal such as copper with a thin coating of silver electrolytically deposited on it. A more durable technique is employed for Sheffield plate, where thin sheets of silver and copper are sandwiched together in a furnace. Like gold leaf, very thin sheets of silver foil can be applied to a variety of surfaces to create a decorative effect.

Aside from the fact that it is soft, and therefore scratches easily, silver is durable, and the only problem generally associated with it is tarnish. In the days when wealthy families could employ a platoon of help, the daily upkeep of silver was not a drawback. Nowadays, it is more common for silver to go a long time between cleanings, and the build-up of tarnish can be quite extreme, making the cleaning process more intensive.

Silver molecules will combine with certain other elements for which it has an affinity to create a corrosion product which we call tarnish. It follows then that removing tarnish (usually by means of an abrasive polish) means removing some of the silver itself. In fact, the effect of years of cleaning can be seen on older pieces of silver, where engraved decorations have become faint due to loss of the surface. Therefore, tarnish formation should be prevented as much as possible to avoid this gradual loss of silver.

Sulfurs are the strongest tarnishing agents, as anyone who has eaten an egg with a silver spoon or fork will know. But sulfurs are also present as pollutants in the air from the burning of fossil fuels, and even generated in our homes from such products as foam rubbers, carpet padding, paints, wool or felt. Residents of the Big Island have their own local sulfuric source to contend with, Kilauea. Chlorides in the air and high humidity-- both plentiful in our Hawaiian climate-- also promote tarnishing. Even normal handling of silver leaves oily salts from our fingers which then develop into distinct corrosion patterns. If silver were not exposed to any of these tarnishing agents we would not need to clean it. As it is, we can only try to reduce the presence of these agents so that our silver will not combine with them to form tarnish.

Storage and handling

Silver kept in a cabinet or cupboard which closes securely enough to prevent air exchange is at least somewhat protected from air-borne sulfurs and chlorides. If the cabinet is

made of wood, the interior surfaces should be well sealed (two coats of water-based polyurethane can act as a barrier against acids in the wood). Other objects stored with the silver should be compatible-- plastics and fabrics may generate tarnishing agents, while china and glass are undoubtedly safe.

Chests for storing silver flatware are generally lined with a fabric known as silvercloth which is impregnated with tiny silver particles which sacrificially absorb sulfurs; this fabric is also available in pouches or zippered bags of various sizes for the storage of individual pieces, and in lengths for lining containers or entire display cabinets (see source list). This fabric is recommended for preventing tarnish; however, the particles will eventually accumulate so much sulfur that they will gradually become ineffective, so be aware that silvercloth will not last indefinitely.

Storing silver in plastic bags and cardboard boxes and tissue paper, unless they are archival quality products, will do more harm than good due to the aggressive acids and gases released by poor quality papers and plastics. But, silver wrapped in acid-free tissue and placed in silvercloth and/or a sealed polyethylene plastic bag (e.g. Ziploc type) will be well protected.

In recent years anti-tarnishing products have been introduced which work by scavenging sulfur and other pollutants from the air. They come in strips or blocks which can be placed in a well-sealed cabinet or storage container; under these conditions the manufacturer states that the strips are effective for approximately six months. One of these is given in the source list.

Finally, avoid touching clean silver with your hands; use a dish cloth or tissue as a buffer. In museums, cotton or latex gloves are always worn by staff handling silver and other metals to prevent the transfer of body oils and salts.

Cleaning and tarnish removal

Tarnish is first visible on silver as a yellowish cast which over time deepens to brown and eventually becomes a very dark and iridescent purple/black. Tarnish is quite easy to remove in its early stages and very difficult to remove once it has reached the black stage; thus, frequent light cleanings are safer for your silver and less time consuming for you than waiting until silver is very tarnished before cleaning. In fact, silver used and then gently washed and dried on a daily basis may seldom require tarnish removal.

Commercial soaps which contain phosphate can leave a brown stain on silver, so choose a mild, phosphate-free detergent. Do not immerse pieces with wooden and ivory attachments such as handles or finials, as water will harm these materials. Silverplate should not be immersed for any length of time, as the base metal will corrode through the plating. After washing, dry and buff silver with a soft, clean cloth. Be sure to clean your silver in this way just before polishing, to remove any gritty or greasy dust and dirt from the surface. Don't use rubber gloves when you wash or polish silver-- they emit sulfurs!

Removal of tarnish generally involves the use of an abrasive and so it is referred to as polishing. Since silver is softer than many other metals, it is of utmost importance that the appropriate abrasive be used-- a product formulated for cleaning copper or brass would be much too strong for silver, and leave disfiguring scratches. In museums, important collections of silver are cleaned of tarnish using a slurry made of specific abrasives such as precipitated calcium carbonate (chalk) and water, applied with cotton or soft cloths. This method is preferred because chalk is a soft abrasive, and because it avoids the use of commercial products which may contain unwanted ingredients. However, studies have been done at the Canadian Conservation Institute to identify safe commercial products for home use.

For silver which is only lightly tarnished, a polishing cloth is gentlest as it does not contain a high concentration of abrasives. Once silver has been cleaned of tarnish, a polishing cloth can be used on a regular basis to maintain a shiny appearance. Birks Silver Polishing Cloth and Hagerty Glove have been tested and can be recommended.

For silver which is heavily tarnished, the following paste products tested well: Twinkle for Silver, Silvo, Goddard's LTSP and LTSF, and Amway. Any of these commercial products can be changed by the manufacturer at any time, however, so the consumer must beware! Also, even the gentlest abrasive will scratch if it is applied with enough force; the trick to using any of these products is to take it easy. One publication notes that you should avoid using pastes which are old or dried out for the very good reason that the concentration of abrasive will be much greater than is safe. After cleaning, unsightly polish residue will be left on the surface unless the object is carefully washed; a toothpick kept soft by soaking in water can be used to dislodge residue from crevices.

Liquid silver dips are another option, and although the danger of scratching is lessened since they do not contain abrasives, they do contain acids which make etching and pitting a possibility. They must be used with great care. If an object is left in the dip for too long it will be overcleaned, and eventually pitted. Also, chemicals which leak into hollow feet or handles can pose a problem as they will continue to work inside the piece; furthermore, the acids are harmful to wood and ivory attachments, as well as to some other metals. It's more prudent to swab the solution onto the silver and rinse thoroughly than to immerse the silver in the dip. Dips may leave a yellow cast on the piece after cleaning; a silver polishing cloth is sufficient to remove this. Hagerty Dip and Goddard's SD both tested as moderate products, but overall, the polishes are preferred.

It is difficult to recommend a way to clean or remove tarnish from silverplate where the plating is thinly applied. Loss of silver will eventually expose the base metal below, which will appear as dark and dull patches, and may become disfigured with corrosion. Probably a silver polishing cloth or a quick swabbing with a dip are the safest choices for silverplate. Some silver objects have areas of gilding applied-- this thin layer of gold is very vulnerable to abrasives, so avoid these areas altogether when you polish. Heavy use of abrasives on sterling silver can also gradually reveal firescale (copper oxide), which shows as black spots and is a by-product of the fabrication process; do not mistake this for tarnish, or conclude that it indicates your piece is plated. Firescale is inherent, and repeated attempts to remove it will only make matters worse.

Whatever product you choose for your silver, don't make the mistake of trying to remove all tarnish; in decorative areas it is meant to enhance texture and relief, and contributes to the aesthetic appearance of the piece. Your silver will continue to give you pleasure if you take the proper steps to maintain it by preventing tarnish as much as possible, and using the appropriate polish when tarnish removal is required.

Source List

Silver polishing cloths, pastes and dips, check in hardware, jewelry, kitchen supply and department stores.

Pacific Silvercloth, manufactured by Wamsutta Industrial Division, 1430 Broadway, New York, NY 10018, (212)930-5368. The manufacturer states that the product is sold in "most finer silver departments, housewares departments and fabric stores." Other brands of cloth are also available.

3M Silver Protector Strips. Distributor, Layton Marketing Group, 3584 Hoffman Road East, St. Paul, MN 55110, (800)597-0227. Call for local retailer, or check jewelers and other stores.

Archival products, such as tissue, acid-free boxes, etc.: **Light Impressions**

Calcium carbonate, chemical supply houses.

Bibliography

Canadian Conservation Institute, CCI Notes.

Silver-- care and tarnish removal. 9/7 (1993). An extensive selection of Notes and Technical Bulletins on conservation topics are available from CCI, 1030 Innes Road, Ottawa, Ontario, Canada, K1A 0C8; request a list of publications.

Consumer Reports. Silver care products.

Consumer Reports 43(2) (1978): 104-7.

Selwyn, L. Historical silver: storage, display and tarnish removal.

Journal of the International Institute for Conservation-Canadian Group (J.IIC-CG) 15 (1990): 12-22.

Selwyn, L. and C.G. Costain. Evaluation of silver cleaning products.

J.IIC-CG 16 (1991): 3-16.

Wharton, G., S.L. Maish, and W.S. Ginell. A comparative study of silver cleaning abrasives.

Journal of the American Institute for Conservation 29 (1990): 13-31.

Copyright © 1996, by Bishop Museum. All rights reserved. All media are for the personal use of students, scholars and the public. Any commercial use or publication of them is strictly prohibited.

The State Museum of Natural and Cultural History

For Museum Information, call (808) 847-3511

Bishop Museum 1525 Bernice Street Honolulu Hawai'i 96817-0916 USA