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Preservation of Metal Items

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The age of metal may in part be indicated by the patina — the result of oxidation or interaction with air or its environment which causes the surface of metal to deteriorate slightly.

To preserve the value of metal items as heirlooms and keepsakes, careful cleaning, storage and display are necessary to preserve the patina and the original finish and characteristics of the metal. Always test cleaning and care procedures first before use on valued items. Follow safety precautions in using solvents and other chemicals. If in doubt, consult a conservator who specializes in metals.

When using commercial cleaners, read and follow the label directions and test first. Hardware stores and lumberyards, grocery stores, and specialty shops and department stores may carry metal cleaners. Remove all residue of the cleaner.

Iron

Before cleaning iron objects, consider first their original condition. Bright metal finishes, the result of recent polishing, or painting, may affect the value of your iron keepsake.

Protect iron objects in good condition from high humidity, fingerprints, salts, and acids. A 40 percent relative humidity level is suggested. Iron is the metal most susceptible to corrosion.

Cleaning. Corrosion usually occurs slowly. Unless it is necessary to remove the surface layer of corrosion, the item may be best left alone to retain its value as a keepsake. Over-cleaning cannot be undone.

Remove dirt, grease, and moisture from the surface. Vacuum the item to remove dirt. To remove oil or grease stains, wipe the item with acetone (use caution — follow safety procedures and read label).

If the condition of the finish is so bad it cannot be saved, fine bronze wool or very fine emery cloth can be used. To remove rust use an abrasive softer than the iron itself. Light rust is removed by rubbing the item with very fine bronze wool and mineral spirits. Strong abrasives are not recommended for historical

iron objects. After the outer layer of rust has been removed, the object should be protected as formation of new rust will result. Some experts recommend avoiding the use of commercial rust removers on valuable items as they can cause pitting or etching of the metal surface. If used, follow directions and remove all residue of the rust remover. Power grinders and wire wheels leave scratches on the surface. If a clean environment and low humidity cannot provide enough protection to prevent rusting, warm the iron piece slightly (e.g. in the sun) and apply microcrystalline wax or beeswax. Waxing is a reversible process. Avoid paraffin. The wax should flow easily when applied to the warmed object without having to melt the wax first. Observe safety precautions. Wipe off excess wax when the item has cooled. Microcrystalline wax is available from conservation supply businesses. Silicone can also be used by spraying or rubbing it on. Avoid application to any wood surface, as silicone may interfere with refinishing the wood and is not easily removed.

If your iron keepsakes include old wagons or farm machinery, etc., which were traditionally painted, rust-inhibiting paints may be used. Determine first the original color and design and whether painting will affect the antique value of the item. If the item can be protected without the addition of paint, the item may be best left alone.

Tin

Tin, because it is not as sensitive to moisture and corrosion, is used as a coating for other metals to prevent rusting. The rust normally seen on tin items is usually the result of the wearing away of the tin layer and the exposure of the iron which rusts. Tin is stable but soft. Use fine polishes such as a silver polish to brighten tin objects, if desired. Heavy and regular polishing can wear away the tin coating.

Pewter

Pewter is an alloy usually made of tin, copper and other metals and is relatively fragile. Heat can damage pewter items.

Store pewter items in a stable environment with a humidity level of 40 to 50 percent. Use of materials that contain sulphur such as some adhesives and felt should be avoided near pewter storage. Wrap pewter items in acid-free tissue and store in polyethylene bags. Pewter will retain its luster for two years or longer if sulfur and moisture are not excessive.

Pewter forms an outer layer (grey patina) which is stable. Whether or not to remove the patina is an individual decision. Collectors may prefer the patina as a sign of age and for its appearance.

Avoid using harsh abrasive or steel wool as pewter is soft. If tests show that the method does not damage the item, dull pewter can be polished with very fine abrasive (rottenstone mixed with mineral oil as an example). Avoid any abrasive or metal polish which leaves fine scratches. Rottenstone is available at some hardware stores and lumberyards or through special order woodworking supply catalogs.

Copper and Brass

Copper and its alloys brass and bronze are affected by chlorides and pollutants in the air. As copper is exposed to moist air, it forms a green surface film which serves as protection against further corrosion. The outer patina may be pleasing and some people prefer the dull look rather than a bright shiny look.

Examine the finish carefully before cleaning copper, brass and bronze. Cleaning items down to bare metal, resulting in shiny finishes, can affect the historical and economic value of some items.

Cleaning. Lacquered objects should be wiped carefully with a soft cloth, and if needed, washed in warm soapy water, rinsed and thoroughly dried.

To clean unlacquered brass and copper, first clean the item with alcohol, mineral spirits or a mild detergent solution to remove dirt and oil. Oxidation on unlacquered copper, bronze and brass can be removed by polishing with fine whiting or precipitated chalk. A combination of two parts denatured alcohol, two parts distilled water, and precipitated chalk or fine powdered whiting mixed to a paste can be used. Precipitated chalk or whiting may be purchased at some jewelry stores, dental supply or drug stores. A paste of rottenstone and mineral oil could be substituted also. Proportions are not critical. Polishing removes a small amount of the metal. Be especially careful of over polishing plated items. Be sure to rinse off all residue of cleaner and oil.

Avoid harsh abrasives such as coarse steel wool on copper and brass. According to some experts, chemical cleaners, especially those with ammonia, are not recommended due to possible damage. Some cleaners contain acids or chlorides which can start new corrosion. Table salt and lemon juice or vinegar (home remedies) may affect future cleaning and speed re-oxidation due to chlorides left behind. Remove all traces of cleaners. Residue of cleaners containing ammonia can also cause corrosion. Wash carefully if they are used. Lime deposits can be removed on copper with laundry water softener.

Storage. Avoid placing items near objects containing sulphur or chlorides. Wrap the items in acid-free tissue and a polyethylene bag.

Silver

Silver does not oxidize in air. However, it does react with sulfur dioxide and hydrogen sulfide in the air or other sulfur compounds and chloride salts, resulting in tarnish. Tarnish is a brown discoloration caused by air pollution, cigarette smoke, some foods, furnace fumes, etc. Egg yolks, mustard, table salt, vinegar, olives, salad dressing, perspiration, rubber floor coverings, rubberbands and sulfur in some household synthetic detergents can tarnish or affect silver. Latex paints may contain rubber, and casein paints will tarnish silver.

Provide an environment that will prevent or retard tarnish. Protect silver from sulfur by wrapping it in acid-free tissue and storing it in tarnish resistant cloth or polyethylene bags. Use caution in storing to avoid trapping moisture and do not allow the polyethylene bags to directly contact the silver. If anti-tarnish strips are used, do not allow them to touch the silver and change strips regularly as they can redeposit the sulfur onto silver.

Silver is a soft metal. Use care in cleaning it. No matter how mild an abrasive polish is used, some silver will be removed each time it is polished. Rubbing with a soft cloth causes some wear.

Cleaning. Clean with soap (not detergent) and water. If additional cleaning is necessary, use as mild a cleaner as possible.

Silver polishes, rubbing and buffing removes tarnish but they should be used with care. Avoid polishing silver with any compounds containing abrasive. A paste of very fine precipitated chalk and denatured alcohol can be used.

After using any commercial polish, rinse the silver in water and polish dry with a soft cloth. Residues of some polish left on silver may cause silver to tarnish faster. Soap may dull silver. Detergents with phosphates may leave a stain if not rinsed.

Chemical electrolysis should not be used on silver items which have oxidized areas as a part of the decoration or on plated silver. The silver plate may be stripped off. Electrolysis can also affect some finishes and adhesives and may result in a hazy surface on some silver which then requires polishing. Although this method is easy, it may leave the surface dull. Consider the advantages and disadvantages before using this method. In electrolysis, the silver is placed in contact with aluminum and covered with a dilute solution of washing soda and water (1 ounce soda and 2 quarts water). Some experts suggest that only experienced conservators should use this method.

According to some experts, silver-dip, although quick to use, may remove decorative oxidation.

Valuable silver items should be treated with care and carefully stored and cared for. Consult a conservator or a jeweler knowledgeable about silver, silver polishes and processes before attempting to clean valuable items.

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