Caring for Ceramics & Glass

History NEBRASKA CONSERVATION

Ford Conservation Center

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About Ceramics and Glass

Objects composed of ceramic and glass are common household items in the form of tableware, vessels, ornaments, and art objects. The properties they exhibit, such as surface appearance and water impermeability, are a result of how they were manufactured.

Ceramics

Ceramics are made from clays with varying composition. Additives such as modifiers and colorants are added to alter the appearance and properties of the finished ceramic. The clay mixture, also called the body, is shaped using a variety of techniques including turning, coiling, and molding. The shaped objects are heated in a kiln to drive off water and realign the crystalline structure of the clay. The clay becomes compacted and in some cases begins to melt during firing.

The three common types of ceramic are earthenware, stoneware, and porcelain. Earthenware is porous and often coarse bodied and has been fired at a relatively low temperature. Stoneware may be coarse or fine bodied, but is fired at a high enough temperature that the stoneware body is impermeable to water. Porcelains are fine-bodied ceramics that are often fired at very high temperatures to create a glass-like, vitrified body.

Ceramics are usually decorated with colored slips and glass slurries. The slurries contain ground glassy materials that melt upon firing, forming a glaze. Colorants and other minerals are used to modify the glaze to produce different colors and effects.

Glass

Glass objects are made from a mixture of ground silica (sand) and other mineral modifying agents (usually metallic salts) that are melted together to create molten glass. The molten glass is formed using many techniques, including blowing, slumping, and molding. Once formed, the object is allowed to cool and harden.

Handling

"Always carry just one object at a time."

The major source of damage to ceramics and glass is improper handling and carelessness. To protect the object from scratching, marking, or bumping, remove dangling necklaces, sharp rings, protruding belt buckles, pens and pencils from shirt pockets, and tuck neckties into shirts. Before you move a piece make sure that there is a level space large enough to place the object and a clear path through which to carry the piece. Always carry just one object at a time. Place your hands around the body of the object rather than lifting by a handle or rim. Gloves or freshly washed hands are recommended.

Never eat, smoke, or drink in the vicinity of an object. Serious consequences can be avoided with careful thought and preparation before, during, and after handling. If a glass or ceramic object is damaged during handling, do not panic. Take a photograph to document the accident. Retain all the pieces, however small, and place them in labeled zip top bags. Do not attempt to put the pieces back together. This is a job for a conservator.

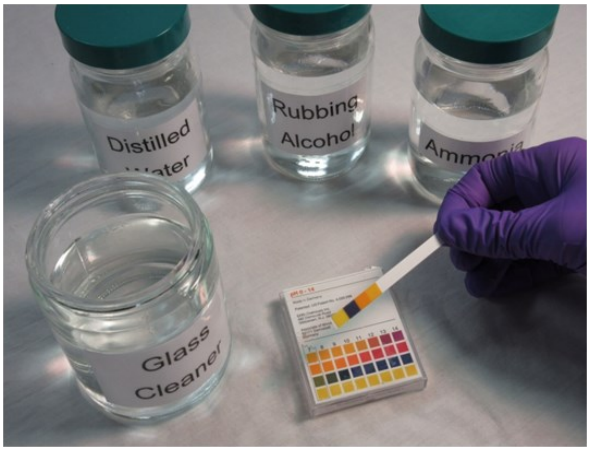
Cleaning

Regular cleaning can be accomplished by simply dusting the surface on a regular basis, using a soft natural bristle brush, such as a haké watercolor brush. If the brush has a metal ferrule, cover it with tape to prevent scratching. There are several factors to consider before attempting to "wet" clean a ceramic or glass object. These procedures should **not** be used on:

- objects that have been repaired,
- objects that have gilt, lustre or painted surfaces,
- objects without a glaze (not "shiny", that absorb a drop of clean water) , or
- objects that are damaged or deteriorated.

Leaving liquids in glass and ceramic vessels for long periods of time will damage the glass, glaze, and body. Some constituents of glass and ceramic glazes will dissolve into the liquid, leaving an etched and weakened surface behind. Once dry, the surface will appear cloudy. Many people confuse this appearance with soil and think that there is a residue or film on the surface. All attempts to remove this "residue" will fail because the surface is actually already etched away.

Objects with any of the characteristics listed above should only be cleaned by dusting with a soft brush. If an object is stable and/or has an intact glazed surface it can be safely "wet" cleaned, the materials and techniques used should be extremely gentle. A clean, well ventilated work area should be provided for the cleaning process, including a large padded work table, adequate light, and appropriate ventilation. Nitrile gloves should be worn to avoid contaminating both the object and your hands. Mask out any non-glass or ceramic elements such as wood, ivory, or metal components with thin polyethylene wrap to protect them during cleaning.



The following materials will be needed:

- A clean towel and clean white sheet to create a padded work area
- cotton swabs (loose surgical cotton, non-sterile)
- gloves (powder free latex or nitrile)
- distilled or deionized water
- denatured alcohol
- 3% household ammonia (non-foaming, non-perfumed)
- small soft natural bristle paint brushes
- small glass jar or bottle
- pH test strips

WARNING: When working with solvents, be sure to follow all recommended safety precautions noted on the containers. Denatured alcohol is flammable and the fumes may be harmful to your health if not used as instructed. **Always be aware of the location of the nearest fire extinguisher when working with flammable solvents like denatured alcohol (ethanol or isopropanol)**

Procedure

1. Prepare a padded work surface by placing a towel on a clean table, and covering it with your sheet.

2. Mix the glass and ceramic cleaning solution as follows:

3. Combine equal parts of water and alcohol in a glass bottle or jar. Slowly add drops of 3% household ammonia, stirring after each addition. Use a pH test strip to measure the pH of the solution. Add ammonia until the pH measures 9. (Follow the instructions provided with your strips.) The solution should remain effective for up to a year if kept in a tightly sealed glass container. Ammonia may still evaporate depending upon how tightly the lid can be sealed. Recheck the pH if using at a later date.

4. Remove any loose dirt or dust from your glass or ceramic by brushing lightly with a soft brush. If your brush has a metal ferule, cover it with masking or painter's tape to prevent scratching. Do not use dusting cloths, as they will not reach into small crevices, can snag on protrusions, or can scratch objects if released grit is rubbed over surfaces.

5. Wearing gloves, apply a small amount of the cleaning solution to a cotton ball or cotton swab and clean the object surface to gently remove dust and soil. Agitation with a very soft brush dipped in the cleaning solution can help remove dirt and debris from crevices and decorative elements. Take care to avoid scratching the object. Replace the cotton balls and/or swabs as they become soiled.

6. Once the object is clean, allow it to dry thoroughly on a clean dry padded surface, such as a towel or sheet. The object should be free from spots or streaks, as the cleaning solution is designed to be spot-free.

Storing and Housing

Ceramics and glass are ideally stored and displayed on level, sturdy shelving far from the reach of children and pets. To help minimize the risk of damage due to vibration, jarring, or earthquake, it may be secured to its display surface with tiny beads of soft "Quake Wax" . If you are going to hang your ceramic plate, avoid the use of spring loaded brackets. These brackets usually exert too much pressure on the edge of the object and cause cracks and chips to the edge over time. This can be avoided by using a two-part bracket that slips over the object, or a plate rack both of which rely on gravity and do not exert undue pressure. It also helps to pad the prongs of the bracket with a synthetic felt or other inert material to prevent scratching and chipping.

Environmental Conditions

Ceramic and glass objects are best preserved by keeping them in a clean, stable environment, where the temperature is kept below 72°F and the relative humidity is kept between 30 and 50%. If there are organic materials such as wood present with the object, it is recommended that the relative humidity be kept above 40% to keep the organic components from drying out. It is always best to keep objects indoors, in a space other than an attic or damp basement. If possible, house the objects in a closed container to prevent dust accumulation and minimize the object's exposure to atmospheric pollutants and changes in relative humidity. Polyethylene or polypropylene storage tubs are readily available at most hardware stores and can be identified by the "PE" or "PP" imprint found on their underside. Another storage option is boxes composed of acid-free, lignin-free board. Avoid using containers or shelving composed of wood, which can off-gas harmful acidic vapors. Use acid-free, lignin-free tissue paper or thin polyethylene foam sheeting for padding. Avoid using newsprint, which can cause permanent staining over time.

Emergency Procedures

Objects that have become wet during an emergency should be rinsed with clean, distilled or deionized water as soon as possible. The rinsed objects should be dried with clean cotton or paper towels. Be careful not to scratch objects by wiping them with towels that are dirty or gritty. Porous ceramics should not be left wet or submerged in liquid. The permeable body will draw dirty water and other stains into the ceramic. If you are not certain about the condition of your ceramics and glass, or if you think there may be a chance that your porous ceramics may be contaminated with soluble salts, contact a conservator for advice before proceeding.

Consulting a Conservator

If your ceramic or glass object is unstable, damaged, or exhibits an unglazed or friable surface that you think may be damaged by cleaning, it is best to have it looked at by a conservator before trying to clean it yourself. A conservator will be able to assess all the issues relating to its care, and determine an appropriate treatment that does not diminish its value. Conservators can provide basic structural repairs, corrosion reduction, protective coatings, and proper storage materials for objects.

Additional Resources

Canadian Conservation Institute. *Care of Ceramics and Glass*[3]Retrieved from http://canada.pch.gc.ca/eng/1439925170205

National Park Service. *Removing Dust from Ceramic and Glass Objects*. Retrieved from https://www.nps.gov/museum/publications/conserveogram/08-01.pdf

Conservation Suppliers

Most materials listed for cleaning, and proper storage can be found at hardware stores, art supply stores, or online. The following are recommended resources that carry more specialized supplies needed for the care and long term preservation of objects.

Conservation Resources International
5532 Port Royal Road
Springfield, VA 22151
Toll free: (800) 634-6932
www.conservationresources.com
Archival housing/storage supplies, photographic supplies, general

Gaylord Archival
P. O. Box 4901
Syracuse, NY 13221-4901
Toll Free: (800) 448-6160
www.gaylord.com
General conservation supplies, housing supplies

Hollinger Metal Edge, Inc.
6340 Bandini Blvd
Commerce, CA 90040
Toll Free: (800)-862-2228
www.hollingermetaledge.com
Archival housing/storage supplies

Light Impressions
100 Carlson Road
Rochester, NY 14610
Toll Free: (800) 975-6429
www.lightimpressionsdirect.com
Photographic supplies, housing, matting and framing supplies

University Products
517 Main Street
P. O. Box 101
Holyoke, MA 01041
Toll Free: (800) 628-1912
www.universityproducts.com
General conservation supplies, housing and matting supplies

Talas
330 Morgan Ave
Brooklyn, NY 11211
Telephone: (212) 219-0770
www.talasonline.com
Conservation supplies, photographic supplies, general

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