

CLEANING GRAVE MARKERS

Why Clean?

Before beginning a grave marker-cleaning project, determine whether the stone really needs cleaning. Many people want grave markers, especially marble markers, to appear as new (white). This diminishes the historic and physical integrity of the stone. Aggressive cleaning causes irreparable damage; it destroys the stone's patina. Before starting the project, check the condition of the marker. If the surface flakes, is sugared, or cracked, do not clean the marker. Cleaning may further damage the surface.

Biological growth *may* cause deterioration of the stone. In such circumstances, cleaning may be needed. Algae, lichen, fungi that may be green, black, gray, yellow, red, orange, brown, or blue can sometimes be hazardous to grave markers. These types of organic growth can trap moisture on the stone surface, secrete acids that can dissolve limestone, marble, sandstone, concrete, and mortar, and insert "roots" into the pores of the stone causing damage. Plant life such as ivy, ferns, and moss may also be hazardous to gravestones because the roots penetrate the stone surface and the plant traps moisture. Many professional conservators clean grave markers prior to repair in order to get closer to the original stone color for in-fill matching.

General Cleaning Process

1. Remove any loose debris or plant life. On smooth stable surfaces, algae, lichen, and fungus may sometimes be easily brushed or scraped off before washing (always use scrapers that are softer than the stone, such as wood Popsicle sticks or bamboo skewers). Most surfaces, however, require wetting the growth before gently brushing or scraping them off the stone. Plants should be gently pulled out of cracks or clipped, and then the debris brushed away from the stone. Do not pull a mass of plant life from the stone; this will often damage the stone. Carefully clip or pull away each section to minimize potential damage to stone.
2. Initiate cleaning process with the least aggressive method using the weakest cleaning agent (gentlest, clean water rinsing). Thoroughly wet the stone, preferably, with a hose and running water. The water will wash away some of the dirt or biological material.
3. Gently brush the stone with very light pressure in a circular motion using a soft-bristle brush to dislodge soil/biological growth from the stone. Wooden handled brushes are preferred over plastic handles because the color from the handles may leave marks on the stone are difficult to remove. Other tools that are useful and do not damage stone if used properly are nylon brushes, tooth brushes, Q-tips, sponges, and wood spatulas.
4. Work from the bottom of the stone up toward the top this prevents staining and streaking as clean water drains downward. Do not use a dry brush. A dry brush can damage the grave marker by removing the upper layers of the stone, causing it to deteriorate faster or by opening pores for future biological growth. Constantly dip your brush in a bucket of water or allow a water hose to run on the stone as you brush. Less abrasion on the stone surface is best.
5. Rinse the brush frequently! Use a clean brush to clean with; don't abrade the gravestone by dragging dirt, sand, particles of broken stone, twigs, etc. across the surface you are supposed to be protecting.
6. Wash all surfaces and rinse thoroughly with lots of clean water. If the gravestone is particularly dirty, change your bucket of water frequently, so that you are not dipping your brush into a suspended solution of the grit and biological matter you are removing.
7. During cleaning, if the stone flakes, cracks, spalls, or sugars (produces lots of grit), stop immediately.

Safe Cleaning Agents

When using these recommended cleaning agents, follow the general cleaning process above. These alternative cleaning agents are recommended for marble and granite, not sandstone (use only water and non-ionic detergents for sandstone). These should be used infrequently and only if cleaning with water is unsuccessful.

- Non-ionic Detergents (e.g., Photo Flo - a Kodak product): Non-ionic detergents are recommended for cleaning grave markers. Electrically neutral cleaning agents, the products do not contain or contribute to the formation of soluble salts and provide a better wetting agent for masonry surfaces. Non-ionic detergents are available from conservation, janitorial, and photographic suppliers. A suggested cleaning solution is one-ounce non-ionic detergent to 5 gallons water. Other brand names include Igepal by GAF, Tergitol by Union Carbide and Triton by Rohm & Haas).

Sources:

Photo-Flo is available at photographic supply stores.

- HTH or Calcium Hypochlorite. Calcium hypochlorite (not to be confused with "liquid chlorine" or sodium hypochlorite) is effective for the removal of biological growth. Calcium hypochlorite is available from swimming pool suppliers. A suggested cleaning solution is one or two ounce calcium hypochlorite to one gallon warm/hot water. This granular product should be used only when a water hose with a good water pressure (e.g., 40 psi) is available.

Sources:

Calcium hypochlorite is available from swimming pool suppliers.

Household Ammonia (Ammonium Hydroxide): Solutions of household ammonia are recommended for cleaning light colored stones such as marble to remove grease and oils. Ammonia is particularly effective for the removal of biological growth. Use one tablespoon of ammonia to one gallon water. Rinse thoroughly. Do not use ammonia on or near any bronze or other metal elements.

Vulpex Soap: Vulpex Liquid Soap (potassium methyl cyclohexyl oleate) can be used as a degreaser. Use protective gloves and provide adequate ventilation. Create a cleaning solution of water and Vulpex Liquid Soap (1 ounce Vulpex to 1 gallon of water, yielding a 1% solution) in a clean bucket. Don't make more than a gallon at a time. Follow the general cleaning process above.

Sources:

Conservation Resources International, 8000-H Forbes Place, Springfield, VA, 22151
800-634-6932 <www.conservationresources.com>

University Products, 517 Main Street - PO Box 101, Holyoke, MA 01041
800-628-1912 <www.universityproducts.com>

- Clay Poultice: Use clay poultices to remove deep-set stains or lichen (some graffiti with guidance of a conservation specialist). An effective poultice is made of kaolin/porcelain clay or fuller's earth (dry), mixed with equal parts of glycerin and water. Mix to peanut butter consistency. Apply poultice mixture or paste (approximately 1/8" thick) on stone surface and wrap with Saran wrap. Cover stone with a plastic garbage bag. Secure with string of tape. The poultice is kept moist under the plastic wrap, and left on the stain as long as necessary (at least a few hours but preferably 24 hours) for it to draw the stain out of the masonry. As it dries, the paste absorbs the staining material so that it is not redeposited on the masonry surface. Scrap off with wood spatulas, and wash the poultice off with water and a natural bristle brush thoroughly.

Sources:

Porcelain Clay or Kaolin clay is available through pottery supplies stores.

Glycerin is available through most pharmacies in small quantities and through soap-maker or florist supplier in larger quantities.

Cleaners NOT To Use

Soaps: Soaps such as Ivory and commercial household detergents (liquids and powders) are not recommended for cleaning stones. These products are rendered insoluble by calcium ions present in stone and hard water.

Bleaches: Do not use bleach. Sodium hypochlorite (common bleach) contains salts that damage stone. Stone "cleaned" with bleach, upon careful inspection, reveals erosion and yellowing.

Acids: Do not use acid clean including Hydrochloric or Muriatic Acid, Phosphoric Acid (e.g. "Lime Away," "Naval Jelly"), or oxalic acid for general cleaning of Grave Markers. The use of hydrochloric or muriatic acid may result in rust staining and the deposition of soluble salts. Acids on marble and limestone can dissolve the stone, leaving an inappropriate glossy and crystallized looking surface. This damage cannot be undone and the use of acids is also dangerous to humans and surrounding vegetation.

Sandblasting: Do not use sand blasting. This approach (even if "soft" materials like glass spheres are used) is very harsh and will dramatically abrade the stone surface. This potentially can accelerate deterioration.

High Pressure Wash: Do not use high pressure washes. Water pressure over 40-50 psi has the potential to significantly damage stone that isn't sound, increasing spalling and accelerating sugaring.

Other AH Purpose Cleaners: TSP (Trisodium Phosphate) is not recommended for cleaning Grave Markers. TSP or Calgon can cause the formation and deposition of soluble salts. All purpose cleaners such as Fantastic, Formula 409, Spic and Span, Borax (Sodium Hypochlorite), and abrasive cleansers are also not recommended. Avoid products containing sodium chloride, sodium sulfate, sodium carbonate, sodium bicarbonate, and ammonium carbonate, due to their ability to form and deposit soluble salts in stones.

Other Helpful Hints

Do not use metal or wire brushes or scrapers, or abrasive pads (e.g., Brillo, Scotchbrite or steel wool) to clean Grave Markers.

Remove lichens and algae by first soaking the stone and then using a wooden scraper to gently remove the biological growth. Do not dig, gouge, or scrape the stone. If the material continues to cling, use more water. Eventually water will soften all biological materials enough to allow them to be safely removed. This process may need to be repeated several times.

Do not expect the stones to appear new after cleaning. Not all stains can be removed safely.

Do not clean marble or sandstone frequently (every few years). Every cleaning removes some stone surface.

Do not apply protective sealer or coatings that are impermeable to water vapor. These types of sealers can trap water inside the stone and cause further problems in the future.

Keep a simple treatment record of the cleaning, including date of cleaning, materials used and any change in condition since last cleaning (such as missing parts, graffiti and other damage). These records should be kept at a central location where the condition of the stones can be monitored over time

Never undertake cleaning during freezing temperatures or if freezing is anticipated within the 24 hours.

Do not re-carve inscriptions. While not actually a cleaning technique, this is sometimes done to "improve" the readability of faint inscriptions. But it does irreparable damage to historic stones, destroying the original artistry, beauty, and historic significance of the stone. There are other approaches if a family wants to ensure that the grave continues to be clearly marked, such as setting a new stone horizontal on the ground in front of the original markers with a new epitaph inscribed.