

The United States Department of the Interior - National Park Service published the following article with important information on how to best clean headstones and monuments.

Article – Cleaning Gravestones

Soiling and staining of cemetery gravestones, monuments, markers, and statuary can result from soil splashing, pollution, rusting bolts or other metal features, bird deposits, and berries or sap dropping onto the stone. Biological growth, such as algae, lichen, or moss, can cover the surface, cause the stone to decay, and make reading the stone difficult.

Cleaning stones should be done with the gentlest means possible. It should never be the intent to make a grave marker look “new”. Even with the most careful technique, cleaning may accelerate deterioration or cause loss of original material. Only use soft brushes and gentle cleaners, such as water or a non-ionic cleaner (neutral pH of 7). Never use wire brushes, power washers, or harsh cleaners, such as bleach.

What is the reason for cleaning the monument?

- Soiling
- Staining
- Particulate Matter/Gypsum crusts
- Biological growth
- Vandalism/graffiti

Soiling Agents or Accumulations

Soiling agents are accumulations on stone that alter the appearance of the stone and may cause additional damage. Different soiling agents may respond better to a particular cleaning method. Soiling agents include:

- Dirt, including soil and mud, often arises from transferring the topsoil to headstone surface. Dirt can lead to dark staining on the surface or an overall dingy appearance. Dirt can penetrate into the pores of the stone and be difficult to remove. Minerals containing iron can leach into the marble surface and leave rust colored stains behind. If the headstone has sunk into the ground over time, then is raised and realigned, a distinct line of soiling can be seen. Dirt can retain moisture after rainfall and lead to the growth of mold or mildew on the stone surface.
- Air pollution, including particles from vehicle exhaust, can deposit on the surface of marble. Nearby factories or industrial activities can generate pollutants that can change the appearance of the stone or chemically interact with the stone over time. For example, sulfur dioxide produced through manufacturing processes and vehicle exhaust can interact with marble surfaces to cause gypsum crusts. These crusts can capture soil and pollution particles to create rough, gray surfaces.[2]
- Biological organisms, such as bacteria, mold, mildew, algae, mosses, or lichen can adhere to the headstone and result in appearance changes. Microorganisms are capable of establishing a

biofilm on the surface of the stone. Biofilms include proteins and sugars that are hard to remove through standard cleaning practices and provide food for regrowth of organisms.[3] Bacteria can consume air pollutants and produce acids that can attack the stone. Fungi can penetrate the pore system of stone and carry bacteria further into the stone.[4]

- Bird droppings or other animal secretions can stain the stone. Depending on the animal's diet, the stains may be difficult to remove. Urine seeps into porous materials and with time produces yellow stains.
- Plant or tree sap is a sticky substance that drips from overhanging trees. The material may contain resins that are not easily dissolved in water. The sugars in the sap may attract insects or provide food for molds and mildews. Shrubs have falling berries that can stain surfaces.

Other threats to headstones

- Salt damage can cause disintegration of a stone surface. The presence of salts within the stone, in the grounds surrounding the stone, in irrigation water, in some herbicides, and in some cleaners, can migrate through the stone's porous network and cause damage. Salts are dissolved and transported by water. They can recrystallize and exert pressures in the pores that may exceed the strength of the stone. [5, 6] Thus, do not use cleaners that leave behind salts to clean marble headstones.
- Freeze thaw cycles can increase stone weathering. Water can enter into openings, cracks, and pores of stone. If freezing temperatures exist, the water can freeze and expand. With many freeze thaw cycles, water can damage stone.[7] Since most cleaning efforts require saturating the stone with water or liquids, do not clean headstones during freezing temperatures or when a freeze is expected within 48 hours of the cleaning.
- Improper cleaning can stain the surface or accelerate stone deterioration. Well-meaning but ill-informed custodians of cemetery headstones do damage through poor selection of cleaning methods. This would include use of power-washing equipment too close to the stone, not rinsing after application of cleaner, and using products in a greater strength than the manufacturer recommends

Important factors to consider

The decision to clean a marker should be carefully considered, as each cleaning can remove a minute amount of original stone. One reason to consider cleaning a headstone is to remove soiling and pollutants which can accelerate the deterioration of the stone. Other reasons might include cleaning locally significant stones, or stones located at the cemetery entrance to help gain public support for additional cemetery improvements. Cleaning stones covered in heavy biological growth will reveal text important to local historians and genealogists. One or more of these reasons may lead to a decision to clean the stone.

Prior to undertaking a project, determine if a stone is stable enough for cleaning. Consult a professional conservator or skilled historically trained crafts person if you have leaning or falling stones, or if surfaces are flaking or sugaring (loose, grainy surface), as cleaning these stones could result in bodily injury or irreparable damage to the stone.

Use the gentlest, least invasive method. Select cleaning methods and materials that, to the best of your knowledge, do not affect the headstone. Chemicals and physical treatments should be undertaken using the gentlest means possible to ensure the longevity of the headstone and to minimize the need to replace the stone.

Do no harm to the headstone during its care or the care of the cemetery. A headstone is placed on a soldier's grave as a marker to identify burial site but serves other roles as well. It is intended to honor the deceased and thus should be treated with respect. Over time the headstone takes on meaning to the loved ones who visit. By its very nature, it possesses added value and association to the veteran's service.

Do's and Don'ts of Cleaning

Do's

- Do no harm
- Do select the gentlest cleaning method to accomplish the task
- Do perform small test patches before cleaning the entire stone
- Do follow manufacturers' recommendations
- Do follow manufacturers' safety guidance
- Do exercise patience

Don'ts

- Don't remove original surfaces
- Don't use bleach or other salt laden cleaners
- Don't power wash with high pressures
- Don't sand blast or use harsh mechanical methods such as power tools
- Don't use strong acids or bases

Consider long-term effects

Recognize that cleaning efforts are part of a continuum of cleaning that will be applied to the headstone. All efforts to clean headstones affect the surface in ways that are not always obvious. Marble is made up of interlocking grains of carbonate mineral which is bound together in a network that includes varying amounts of pores. When the surfaces are cleaned, some of the grains can be loosened and lost. Sometimes the mineral binder that holds the stone together can be affected. Over time and many cleaning campaigns, the surface can be altered noticeably and result in a sugaring appearance. Some marble is more prone to this type of deterioration than others. For example, Colorado Yule marble is more affected by cleaning than Cherokee White marble from Georgia.

Don't remove the original surface

The original surface may be polished and smooth. The inscriptions are generally carved into the headstone. If the original surface is altered, the way the headstone subsequently weathers may be

changed. As the surface roughens, it will soil more easily. The inscriptions can be eroded away, making the headstone harder to read. Never aggressively scrub the surface or use wire brushes or mechanical methods such as sanders or grinders to clean the surface. See also –mechanical cleaning: power tools, below.

Evaluate the condition of the surface prior to cleaning. Is it:

- Powdery
- Sugaring
- Flaking
- Spalling

Minimize cleaning impacts Minimize the number of times a headstone is cleaned in its lifetime. While a cyclic maintenance plan is needed to maintain the appearance of the headstone, over- cleaning should be avoided. If possible, historic headstones should not be cleaned more frequently than once a year.

What are some considerations regarding cleaning methods?

- Acceleration of deterioration
- Loss of original materials
- Long-term stability of monument
- Long-term effects of cleaners

Test cleaner first

ALWAYS TEST the cleaner for suitability and results before overall cleaning. Conduct the test using the recommended application procedures. Let test area dry thoroughly before inspection. When using a biocidal cleaner, it may take several days before the full cleaning effect is realized. When practical, allow two or more weeks for biological soiling to disappear

Consider Environmental Conditions

Environmental conditions may dictate the frequency of cleaning. For example, headstones that are located in shady and damp areas under trees may need to be cleaned more frequently than headstones in sunny areas.

This article was published March 2022 and includes video tutorials. Click this [HERE](#) to visit the full article and view the attached video tutorials.

LINK:

<https://www.nps.gov/articles/000/cemetery-preservation-course-cleaning-grave-markers.htm#:~:text=Even%20with%20the%20most%20careful,harsh%20cleaners%2C%20such%20as%20bleach.>