

Gravestone/marker cleaning instruction was given by Jon Appell of Atlas Preservation.

Atlas Preservation is a company which retails, among other related products, headstone restoration and cleaning supplies. This event took place in the Old Soldiers Cemetery in Madison County, Kentucky where several Civil War soldiers are interred. As it is a traditionally African American cemetery the soldiers had been members of various USCT units. This historic cemetery is dotted with many beautiful and touching memorials to family as well as to soldiers who were true patriots of our country.

Members of the Sons of Union Veterans of the Civil War were instructed on the best techniques for restoring and cleaning headstones. Several products which have a proven record of preserving historic monuments and family memorials of the deceased were demonstrated.

Important safety matters to take into consideration, says Jon are in older cemeteries and graveyards, and older burial sites may be prone to collapse, even those that might be thought old enough to have already suffered all the settling likely to happen. It is best to tread carefully. Other hazards include animal burrows or dens, natural occurring sinkholes, especially in neglected or overgrown sites that may not be readily seen.

Additionally, attendees were reminded that there are a variety of animals that may not appreciate an intrusion into their habitat or domain. Venomous snakes are something of which to be aware, as well as ticks, grass chiggers, and mosquitoes.

In some cases large, domesticated animals may not be very happy about cemetery restoration either--for example a cow around her calf. A good insect repellent would be recommended for the insects, but with snakes and others, a healthy dose of situational awareness is much to be desired. Don't forget sunscreen if working outside for longer periods. Also remember to have plenty of water to drink. Please hydrate!

Secondly, the actual cleaning of gravestones was discussed. One of the first things to remember is that the mold, lichens, and fungus that appear on monuments are usually caused and spread by spores. Especially sensitive individuals might want to wear a mask to eliminate inhalation of these possibly irritating spores. Dry cleaning (by brushing) is usually not a

good idea, as these dry spores may be inhaled or at least come into contact with eyes or nose. Therefore, it is important to carry plenty of water to the site.

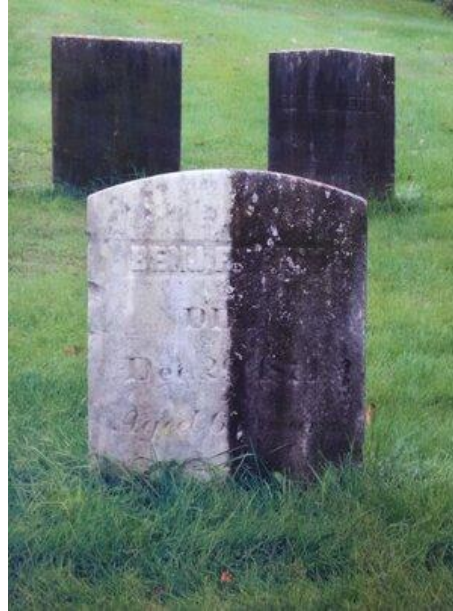
Using water on the surface to be cleaned as a first step will minimize these spores becoming airborne. Always have more water on hand than you think you may need. It is surprising what a difference it makes by simply using water to wet the surface, then brushing it with a SOFT-bristle brush to loosen any growth. Always steer clear of scouring pads, wire brushes and the like, as these can do damage that can't be repaired. Doing so can speed up the deterioration of the object that needs cleaning and hinder the preservation process. Many of the very old stones can even be broken with vigorous brushing.

Pressure washing is almost always a no-no. Some companies that pressure wash use chemicals that are detrimental to the monument. Pressure washing can force water into open seams or naturally occurring cracks. This can cause water to settle into them, and, during freeze and thaw cycles, damage the monument. Pressure washing can also remove the tiniest bit of the top layer of the monument. Many, even most, chemicals can be caustic to stone materials, such as bleach or mild acids, speeding the natural weathering of the stones. Please refrain from using such materials.

Gravestone Cleaning: What Not to Do

Feb 23

Written By [Jonathan Appell](#)



Gravestone Cleaning: To clean or not to clean, that is the question? One of the most often asked questions regarding historic gravestones: "How do I clean this stone?".

Unfortunately, there is no one correct answer. The first rule to follow is to use the gentlest means possible. With this being said, a highly deteriorated gravestone should be left alone. Many well-intentioned cleaning efforts have defaced or destroyed weak and fragile stones.

Since it is easily possible to do significant damage in a cleaning effort, first we will cover the most common errors.

The following cleaning techniques have no place in a historic graveyard!

1. **Do not employ pressure washers.** They work great on modern granite memorials, but can deface and erode the softer aged tombstones.
2. **Do not use any type of acids or acid based solutions.**
3. **Do not use any kind of abrasives**, especially sand blasting.
4. **Do not use metal or wire brushes**, leave them in the garage.
5. **Do not bleach or any other household cleaners**, leave them in the kitchen!
6. **Do not attempt to clean any stone that appears to be flaking, crumbling, or weakened in any way.**
7. **Use your better judgment**, if in doubt it is better left undone.

The following guidelines should point an aspiring gravestone cleaner in the right direction. This is not intended to be a comprehensive tutorial but will keep you from jumping right into the frying pan! **Read our next blog for tips and tricks on what TO DO** when it comes to gravestone cleaning.

D2 Biological Solution is the top recommended solution to use for cleaning gravestones. Click the links below to grab yours! Kits, cases and drums are also available from [Atlas Preservation](#).

- [D2 Biological Solution](#)
- [D2 Biological Solution Mini Cleaning Kit](#)
- [D2 Biological Solution Small Cleaning Kit](#)
- [D2 Biological Solution Large Cleaning Kit](#)
- [D2 Biological Solution 4 Gallon Case](#)

While several varieties of material have been used to produce headstones, some local stones, such as limestone in central Kentucky, are sedimentary and are layered. Some stones are softer than others. It is important that we preserve history and do no harm. It is important to use methods and products that have a proven track record

Feb 24 2021

Written By [Jonathan Appell](#)

Stone Identification

The following are the most common stone types found in American Graveyards, based on the order they were predominately used.



Slate: 1650-1900 - Metamorphosis Shale

The earliest stone used extensively in American gravestones. The Boston, MA area was the hub of American gravestone carving activity, from approximately 1660 – 1800. Luckily there was a supply of very high-quality slate to carve into stones. Many still survive and are most often a gray color.

They tend to be thinner than marble but are mostly unaffected by the acid rain. Their inscriptions tend to be shallow but are often very readable. Nearly all the oldest gravestones in Old Kings Chapel and the Granary, both in Boston, are composed of slate.



Sandstone (Brownstone): 1650- 1890 – A sedimentary rock / Compressed Sand, etc

The most commonly used stone throughout the Connecticut River valley. The largest group of Brownstone quarries in America was in the East Middletown CT. area, now Portland, CT. There is today one active Brownstone quarry in America, which has recently resumed its operation in Portland. Brownstone was transported via railroads, during the latter part of the 1800's, throughout the Eastern United States and beyond.

Brownstone is a type of sandstone which ranges in color from a dark blond, to varying shades of brown. It tends to delaminate or separate along its bedding planes. It can deteriorate quickly, turning back into the sand from which it was formed.



Marble or Limestone: 1780-1930 - A Sedimentary rock / Compressed Shells, etc

The stone of choice in antiquity. Most desired in its purest white form.

Marble was white with a satin finish, when first installed in graveyards; Limestone was usually darker and tended towards gray. They are both

composed from calcium carbonate, therefore are adversely affected by acid rain.

Once weathered, they may be hard to read. They are likely to be stained and darker in color than when new. The surface is likely to be pitted to some degree. Marble was most common throughout the 1800's but was also used in the late 1700's, in the early 1900's to some extent.



Granite: 1860- Current Day - Igneous rock- Liquid Rock, cooled under ground

By far, the most durable of all-natural rocks. One of the strongest and most long-lasting materials which exist in nature, hence the largest quarries name, "Rock of Ages".

Most commonly found in a gray color. Many other regions also produced distinctly colored granites which were more common, closest to their source. Westerly RI produced a large amount of high-quality granite which is tanner in color. Another popular granite was Quincy, which was used throughout the Boston area.

Today, granite is used throughout the world in Cemeteries and building facades. It is considered the stone of choice due to exceptional strength and permanence. Many modern cemeteries allow only granite headstones and markers to be installed. Through extensive world trade, granite is now available in a wide range of colors.

It is also important to check with administrators, such as cemetery boards, where applicable, for permission, and, certainly, private property owners

must give permission before heading into a cemetery to do restoration or cleaning.

There is an article on the Department of Veterans Affairs website about approved cleaning methods. Some products are mentioned by name, however there are no readily available studies regarding products other than D-2. D-2 is the product that has been tested and is used by the Park Service and national cemeteries, and even on the White House. One other product some have used is “Wet and Forget.” It is approved by the V.A. for cleaning. More information on these products can be found at <https://www.cem.va.gov>.

D-2 works best in warmer weather, 45 degrees (f) and up. Scraping first (the growth which has been wet to decrease spore release) with wooden paddles or even Popsicle sticks, and then brushing with a soft brush makes for a better outcome. When D-2 is sprayed on according to the instructions on the product, the project can be left as is and just walk away from it. In a few weeks, a noticeable difference will be apparent.

Atlas Preservation is the retailer for D-2 that I have personally used says Brother John Buckler, and was the product used during the earlier mentioned demonstration. Atlas preservation is a retailer for many restoration related products, such as brushes recommended for this work. Atlas has cleaning and repair kits available. There are YouTube videos available to demonstrate proper cleaning and repair techniques and is very informative.

Cleaning Gravestones, Monuments, & Stone Sculptures

Feb 23 2021
Written By Jonathan Appell



One of the most asked questions is, how do I clean this stone? Although the cleaning of a gravestone may seem quite simple, this is not always the case. Every time a historic stone is cleaned, some of the stone's surface is removed in the process. Clean it too often, and all the inscription and details may be washed away!

Before any cleaning may begin, it must be determined what the objective of the proposed cleaning project is. Most people's first desire is to "restore" the stone, or to make it look new again. But, upon further consideration it may not be desirable to have a new looking stone in an old graveyard. It is likely to stand out like a sore thumb!

So, what is the driving force behind the desire to clean gravestones?

One reason is to read an otherwise obscured inscription. Another reason may be to bring back the beauty of an otherwise discolored stone or statue. If it looks old, it's your gut feeling that it should be cleaned.

Let us now think in terms of what is best, to promote the life span of the gravestone, to help preserve it.

1. **Is the stone cleanable?**

If the stone shows signs of chipping, scaling, flaking or other forms of deterioration, do not do any brushing or scraping as part of the cleaning process. *You will do more harm than good.* Apply a high-quality biological cleaning solution only. Grab the top recommended [D2 Biological Solution here!](#)

2. Next, determine **what kind of stone is it?**

The type of stone can determine what technique should be used to clean it. Most common gravestones are likely to be sandstone, slate, marble, limestone, or granite, although there are many other possible options.

3. Regardless of what kind of stone you are cleaning, the first rule is **always to be as gentle as possible**. Use the least aggressive approach to accomplish the cleaning objectives desired and do so safely without harming the stone. It may not be possible to clean the stone as quickly as you had hoped before beginning the project. Long term biological growth such as lichens and molds may have been attached to the stone for decades and are highly variable in how fast they can be removed.

Be flexible and relax your preconceived notions regarding what the stone will look like once the cleaning operation has been completed.

5. There are many different types of brushes which work well for cleaning cemetery memorials. It is best to **always have a wide range of brushes on hand**, including multiple sizes, with various stiffness, of the bristles. Always begin the cleaning process with the softest brush to see if it will get the job done. Progress to stiffer bristles only if needed. Although mentioned previously, I will repeat, **do not use wire or metal brushes of any kind, as they may scratch damage or stain the stone.**



Suggestions regarding brush selection: Some conservators advise against using natural bristle brushes, as they may leave behind residue which might increase future biological growth. In a purest sense this may be true, and when conserving artifacts in a museum setting, this may be good advice. Gravestones in an outdoor environment do not seem to be affected by this extremely minor and possible residual effect, which natural bristles pose. On the other hand, *natural bristle brushes are often softer and more effective for many types of stone cleaning.*

Car wash type brushes work well for the softer end of the spectrum. Do not use old, contaminated brushes from previous non gravestone cleaning projects. Typical scrub brushes are more aggressive and vary in size and exact stiffness of the bristles. Grout cleaning brushes are very effective for getting into tight spaces, such as cleaning in and around the inscriptions and carvings.

- Always remember to **rinse often** as the cleaning progresses to monitor for flaking or scaling to the stone.



I love to use plastic scrapers whenever possible to remove biological activity.



Certain types of growth can be removed quickly and effectively with only the use of plastic. Atlas Preservation offers a great selection of these types of scrapers, which are also included in the D2 Gravestone Cleaning Kits! Not all plastic scrapers are formed from the same quality and hardness of plastic. In many respects the softer the plastic the better.

Instead of damaging the stone, the plastic wears away fairly quickly.

6. Always scrub in a random orbit motion, to avoid streaking or erosion to the surface of the stone. Many conservators make an issue to recommend starting the cleaning operation at the bottom of the stone, working towards the top. This serves to avoid staining the stone from runoff as the cleaning advances upward. I have found that with an average sized gravestone or monument, it makes little difference where you start cleaning, provided you clean the entire side once you begin. But, most importantly, be sure to

completely rinse off the stone before it dries. Streaking and staining may result if the dirty water is allowed to evaporate before being rinsed from the stone.



Fred Oakley, one of the founding members of [AGS](#) and their preservation specialist once asked me if I knew why the back of a gravestone should always be cleaned first?

He followed up with, "If you don't clean it first, you may not clean it at all! Once you have cleaned and read the inscription on the front of the stone, many people don't want to spend the time required to finish the job." Funny, but probably true some of the time.



[D2 Biological Solution available at Atlas Preservation!](#)



Before and after a gravestone cleaned with D2 Biological Solution

Biological Stone Cleaning Solutions

Over the past decade or so there have been several newer products developed which will effectively remove all biological activity from stone and masonry without any risk of harming the stone itself. These types of cleaning products are known as biological cleaners. The first, and arguably best, material created in this capacity is called **D2 Biological Cleaning Solution**. It has been well tested and researched by groups such as the NCPTT, National Center for Preservation Technology & Training, with very positive results. It was applied to the Washington Monument in 2013!

One major issue with most cleaning products is that they will only clean what's on the surface of the stone. Just like a tooth that has roots way beneath the surface, so does most biological growth. A biological cleaning solution like D2, however, will penetrate way under the stones outer surface to reach deeply into the root structure, and kill off the growth. The stone will then become cleaner by itself over the next days, weeks and months, even without the need for hand scrubbing which can contribute to erosion on very soft and crumbly stone. Additionally, biological solutions are the only products which will also prevent and inhibit future growth for at least a year, and in many situations many years.

Another major difference regarding the application of [D2](#) with nearly all other stone cleaners, is it may be sprayed onto a dry-stone surface. Within a few minutes it will go to work eating away at the biological activity.

A nonionic detergent is safe to use on nearly all types of stones encountered in Cemeteries and graveyards. It has a neutral PH which will not affect or harm historic stones. It is sold as a photography product and distributed by Kodak. It comes in a small plastic bottle, but you do not need to use much at one time. Just a once in a gallon or two of water to make a cleaning solution. A product called Vulpex also will provide similar results. A word to the wise, don't expect miracles to occur while cleaning with a nonionic detergent, you must be patient as results are often less than spectacular.

Another highly effective cleaning method is to poultice the stone. This employs the concept a capillary action to wick away staining safely. A poultice is simply a clay type substance which is placed on a pre moistened stone. The stone is then covered to avoid evaporation. Once the stone is uncovered, it is rinsed clean of the poultice and hopefully the staining attempting to be removed.

- This is a very safe technique when properly employed and may be performed on very delicate surfaces. It is often used in museum environments.

Entire books have been published on cleaning stone and masonry. Historic Scotland has published individual books for each major kind of stone encountered.

Many web sites have good information on gravestone cleaning, some of which are included in our [Related Products & Resources Directory](#).



Cleaning Techniques Based on Stone Type

Listed in order from the safest, or least aggressive, to the most aggressive:

Slate: Clean water, non-ionic detergent, biocide solution

Sandstone: Clean water, non-ionic detergent, biocide solution

Marble/ Limestone: Clean water, non-ionic detergent, biocide solution, ammonia and water solution

Granite: Clean water, non-ionic detergent, biocide solution.

Modern Polished Granite: Clean water, non-ionic solution, biocide solution, Acid based granite cleaning solution, include with links. It is most common in a dry crystal form and is mixed with water to form a solution. Its strength may be varied based on the amount of crystals added. Please be very careful, as eye protection and rubber gloves should be worn. Also, it may kill grass or plantings in the area around the stone being cleaned.

Unpolished Modern Granite: The same as polished. Additionally, plain old-fashioned cleanser may be doing the best job of all. Comet or common dry cleanser without the extra cleaning crystals works wonders when cleaning

unpolished modern granite monuments. Do not use cleanser on polished granite as it may scratch the finished surface of the stone.

Francis Tash, one of the most experienced monument installers in America, who performs installation for Rock of Ages recommended cleanser for use on unpolished granites to me many years ago.

A poultice may be used safely on nearly any stone surface, so I have omitted it from the index above.

See other great articles at: <https://www.gravestonepreservation.info/articles>

There are other retailers such as Amazon and even eBay that carry these products. There are discounts available on the Atlas website.

<https://atlaspreservation.com> . Atlas Preservation also has a Facebook page where demonstrations of stone cleaning such as that Camp 5 attended on September 1, 2021 can be found.

<https://www.facebook.com/AtlasPreservation>

Where to Buy D/2

Here are a few suppliers for this product:

Limeworks

<http://www.limeworks.us/>

Cemetery Preservation Supply, LLC

<http://www.gravestonecleaner.com/>

Bonestone

<http://www.bonstone.com/>

Granite City Tools

<http://www.granitecitytool.com/>

Here is a good link about the proper way to clean gravestones

<http://www.chicora.org/cleaning.html>