

## Cleaning Basics...

Wire brushes, metal instruments and abrasive pads may give you instant satisfaction but, if you clean with anything that is harder than the stone, you risk scratching the face of the stone and causing more damage in the long run. The same goes for acidic cleaners, which includes most household cleaners. Power washers are also NOT recommended. Anything that puts out greater than 60 psi is too much force to use on older fragile stones. A garden hose putting out a gentle soaking spray is enough to clean and flush the stone (garden type sprayers also work well). If you're talking about stones from the 20th century and not marble, that's a different story."



"Before" covered with lichen

## Cleaning a gravestone...

Stones are composed of minerals and salts. Adding chemicals to them can often cause chemical reactions that will erode the stone faster than if you just left it alone. This damage is not immediately evident, as in the case with bleach being used on marble. The stone is exposed on all sides to the elements. Using bleach will not only give you instant brightness but will cause the stone to change in pallor and most often become rough to the touch. This is because the sodium chloride in the bleach has dissolved the binding minerals and caused the quartz crystals to start to exfoliate. When this process is used on particularly soft marble and limestone, the lettering is the first to disappear. Something that is over 100 years old shouldn't look bright and new..!



CGN recommends that you use the following low tech method and consult with us or professionals before using other methods. For marble, limestone and sandstone use water and soft bristle brushes, natural or nylon. Granted it doesn't sound like a miracle cleaner and it doesn't happen quickly but with some patience and time this will clean most environmental soiling and lichens from stones. Keep the stone wet at all times; really wet. Where a garden hose is not available, be sure to bring plenty of jugs of water and keep dowsing the stone as you work and, most importantly, flush the stone well when done. Scrub the stone from the bottom up to avoid streaking and further staining. Household ammonia can be used if one can stand the aroma, but again be sure you flush the stone completely, more than one or two times, when you are done. Use a mix as you would for household cleaning, about 1 cup to a gallon of water. Don't buy ammonia with anything extra in it, such as scents and suds. Wearing proper eye protection is also a must.

If lichen is a problem, you can soak it down with water and scrape with a wooden or plastic scraper. Tongue blades or craft sticks and inexpensive plastic putty scrapers from home stores work well. Remember, no metal. There are also poulticing techniques that can be used to soften lichen. Many lichens will, once removed, leave a scarring effect on the stone because the waste product they give off is an acid that works with the stone's own salts and chemistry to erode it or bleach out some of its mineral component.

Credit to Connecticut Gravestone Network

[www.ctgravestones.com/Conservation/cleaning](http://www.ctgravestones.com/Conservation/cleaning)

# Evaluation of Selected Brand Name Materials for Cleaning Gravestones

From the Association of Gravestone Studies [www.gravestonestudies.org](http://www.gravestonestudies.org)

## A. Soaps and detergents

1. Soaps (e.g., "Ivory"): commercial household detergents (liquids and powders) are not recommended for cleaning masonry. They are rendered insoluble by calcium ions present in stone and hard water. They may also produce free alkali and fatty acid salts.
2. Non-ionic Detergents (e.g., Photo Flo - a Kodak product): Non-ionic detergents are recommended for cleaning gravestones. They are electrically neutral cleaning agents that do not contain or contribute to the formation of soluble salts. They provide better wetting of the masonry surface and, therefore, successfully facilitate the removal of general soiling. 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.

## B. Acidic Cleaning Materials

1. Hydrochloric or Muriatic Acid, Phosphoric Acid (e.g. "Lime Away," "Naval Jelly"), oxalic acid are not recommended for general cleaning of gravestones. The use of hydrochloric or muriatic acid may result in ferrous chloride (rust) staining and the deposition of soluble salts. Muriatic acid, which is readily available in hardware stores, is a raw acid. It is a by-product of processing steel and contains metallic particles that can cause ferrous staining.

## C. Alkaline, Corrosive, and Biocidal Cleaning Materials

1. Sodium Hydroxide (e.g., "Borax"), Sodium Hypochlorite (e.g., "Clorox" "liquid chlorine") is not recommended for general cleaning of stone.
2. Calcium Hypochlorite (e.g., Chlorine, "HTH," "Shock Treatment"): Calcium hypochlorite or chlorine is effective for the removal of biological growth. It is a granular product that is not to be confused with "liquid chlorine" or sodium hypochlorite. Calcium hypochlorite is available from swimming pool suppliers. A suggested cleaning solution is one ounce calcium hypochlorite to one gallon hot water. This product should be used only when a water hose with a good water pressure (e.g., 55 psi) is available.
3. Ammonium Hydroxide (e.g., household ammonia): Solutions of household ammonia are recommended for cleaning light colored stones. Ammonia is particularly effective for the removal of biological growth. Use one cup ammonia to one gallon water.
4. Quaternary Ammoniums (e.g., algaecides or biocides for swimming pools): Quaternary Ammoniums have a slightly different chemical structure than ammonium hydroxide. They are especially effective for the removal of biological growth, particularly stubborn black algae. Quaternary ammoniums are available from swimming pool suppliers and list ingredients such as alkylbenzyl trimethyl ammonium, benzyl alkyl dimethyl ammonium chlorides, or benzyl alkyl dimethyl ammonium bromides.
5. Tri-sodium Phosphate (e.g., "TSP," "Calgon"): Tri-sodium phosphate is not recommended for cleaning monuments. It can cause the formation and deposition of soluble salts. "Calgon" contains tri-sodium phosphate and a number of additives that may be detrimental to monuments.
6. "Fantastic" All Purpose Cleaner, "Formula 409," "Spic and Span" and abrasive cleansers: These are not recommended for cleaning monuments. 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 monuments

## III. MISCELLANEOUS MATERIALS OR TOOLS

- A. The following items are recommended for use in cleaning procedures for masonry: soft natural bristle (e.g., tampico) brushes, nylon brushes, tooth brushes, Q-tips, sponges (especially natural sponges). Wood and some plastic spatulas are also recommended.
- B. Do not use metal brushes or scrapers, or abrasive pads (e.g., "Brillo," "Scotchbrite") to clean monuments

## IV. SOME FINAL REMINDERS ABOUT BRAND NAME CLEANING MATERIALS

- A. Do not rely solely upon product labels or advertising. Brand name materials that are readily available from hardware and grocery stores are generally intended for household use. Information is not provided for specialized applications outside of the home or workshop.
- B. Remember to consult with a conservation consultant before cleaning. The use of improper cleaning materials and practices can cause serious and irreparable damage to gravestones