

## General Guidelines on How to Clean Stone

**Identification of the stone:** The most commonly encountered stone types in this area are limestone, marble, sandstone, granite (fairly rare), cast stone, and concrete. Limestone is probably the most common architectural and sculptural stone in Kansas City. The majority of the cut-stone pedestals around town are limestone as are many of the stone facing panels on other pedestals. Many of the fountains are either limestone or marble. Granite is used primarily as pedestal facing panels and commemorative plaques. Sandstone may be encountered but it is also fairly rare in this area.

- 1. Limestone-** It comes in various colors, usually shades of beige, so it may be hard to identify at first site and can easily be confused with marble, cast stone and concrete. Except for the blocks used in pedestal construction it is usually polished smooth, it is cool to the touch, and microfossils may be visible.
- 2. Marble-** Most of the marble pieces in this area are made from a bright white variety of marble; it is usually whiter than limestone. It is composed of grains of calcium carbonate so the surface has a grainy feel and the grains may come off when touched; the grains resemble sugar. If this sugar comes off when touched the stone surface is starting to deteriorate and the stone should be handled very gently. Marble is also cool to the touch.
- 3. Sandstone-** This is another grainy stone but it can be distinguished from marble in that it is never bright white in color but rather more gray or brown.
- 4. Granite-** It comes in a variety of colors from white and pink to black. It is 'speckly' in appearance due to the different minerals present. It is very hard and generally looks better than other types of stone because it is quite resistant to weathering. Most of the granite here can be found as cemetery monuments and markers as well as commemorative plaques.
- 5. Cast Stone and Concrete-** These two types of stone are difficult to tell apart and can be difficult to differentiate from limestone since they are all made from the same basic material. These materials will be found in profusion in Kansas City due to the long presence of Van Liew's Home and Garden Shop here as well as they're being relatively more affordable. Deteriorated pieces may have their internal reinforcement armatures visible, pebbles used in the concrete mix may be visible, and other 'foreign' material may also be visible. Mold lines could be visible on mass produced items like urns.

**Cleaning:** Statuary, fountains, plaques, etc. may be covered in just plain dirt or they may have organic growths on the surface. A green, yellow, or black crust on the stone is indicative of organic growths. A thin hard black crust that forms on limestone and marble is not of an organic origin but rather is a weathering product called gypsum. It can be removed if it is unsightly but it requires special chemicals and procedures not applicable here.

Before removing dirt and growths it is important to consider the age, location, aesthetics, and condition of the stone. Cleaning is irreversible; removal of the dirt and aged lichen from the stone may not be visually appropriate. Also remember that a clean stone does not have to be absolutely sparkling clean! A hundred year old sculpture should look well cared for and appropriate for its age.

1. If organic growths are present and it is determined that they need to be removed an application of a biocide will kill the growths and make them easier to remove. One product is appropriate for this procedure: Enviro Klean Biowash (dealer for this product will be listed at the end). Both can be used directly out of the bottle and diluted according to label instructions. The solution is sprayed onto the stone surface after initial wetting of the stone with clean water. The biocide should be allowed to dwell there for approximately five minutes, being careful that the surface does not dry out. After this waiting time the growths can be gently scrubbed off with a soft bristle brush. Particularly thick growths may be scrapped off first with a wooden or plastic tool being careful not to scratch the stone surface. This procedure can be repeated as many times as necessary to remove the organic material. The stone should be thoroughly rinsed with clean water after removal of the organics if additional cleaning will not be done.

A shadow may be left behind where the organics were deeply embedded in the stone. Under some circumstances this shadowing can be reduced but it takes specialist knowledge and materials.

It cannot be overstressed that all scrubbing has to be done gently and with soft bristle brushes- no wire bristle brushes should ever touch the surface of stone! Weathered marble is particularly sensitive to loss of cohesion between the mineral grains (sugaring) so if the stone is sugaring, think twice about cleaning it.

2. Cleaning of the stone is done with a mild detergent like Ivory Liquid, the clear version not the white version. Wet the stone down thoroughly with clean water before beginning the cleaning process. Use light pressure on a soft bristle brush and check the brush or wash water for any grains of stone that may have dislodged. If you see lots of particles you are scrubbing too hard. The stone doesn't have to be completely clean the first time around so two or three gentle cleanings will be better than one harsh

cleaning. Remember that the stone will look dark while it is wet giving the impression that it is still dirty but it will lighten considerably as it dries. Also remember to very thoroughly rinse the stone after each cleaning.

**Equipment:** All of the material you will need is available locally with the exception of the biocide D-2.

Plastic buckets

Plastic spray bottles

Plastic or wood handle brushes- try to buy brushes with clear or white colored plastic handles as colored handles will transfer their color to the stone if you rub the handle on it. You don't want to finish cleaning a marble sculpture and then discover red colored streaks all over it!

Stencil brushes- these are good for getting into tight spaces. Be sure to tape over the metal ferrule on the brushes so you don't scratch the stone.

Plastic or wooden scrapers- plastic putty knives are easy to find and wooden scrapers can be found at art supply stores

Safety glasses

Rubber gloves

Garden sprayer- used to rinse the stone if no hose is available

Biocide- Enviro Klean Biowash is made by Prosoco in Lawrence, Kansas and can be purchased at:

**Carter-Waters**  
2440 W. Pennway St.  
Kansas City, MO 64141  
816-471-2570

The biocide is safe and will not harm higher forms of life like grasses, flowers, humans but always protect your eyes and don't breathe in any over-spray. Read and follow package directions.

**Some Don't's:**

1. Never use any acids on stone. Acids are uncontrollable and can do more damage than is visible to the eye and can continue to wreck havoc even when you think they are all rinsed away.

2. Never use any metal scrapers or brushes on stone.
3. Do not use a pressure washer. The pressure can actually drive pollutants into the stone and the pressure can blow weakly adhered fragments off the stone surface.
4. Don't use any wax on stone. There is a temptation to wax stone to prevent water from penetrating but the wax also prevents water from evaporating from the pores of the stone. There are special solutions that act as water repellents that let the stone 'breathe' but only a professional conservator should make the decision to apply this material.