

HOW TO IDENTIFY STONE

INTRODUCTION

Many people invest thousands of dollars on natural stone to enhance their surroundings and increase property values. Then unknowingly, damage their stone by using cleaners not designed for natural stone. Most "everyday" or "general" type cleaners contain acids, ammonias, vinegars, and other chemicals harmful to stone and sealers. Many scouring powders and creams contain abrasives that may scratch the stone surface. Stone Pro offers stone cleaning, restoration, and sealing supplies that will renew your stone's natural color, remove hard water stains, etching, and oil stains, as well as protect against unnecessary dullness and degradation.

To make sure your stone keeps its natural beauty, it is important that the correct cleaners and polishes are used. Understanding the type of stone and the chemical residues you are trying to remove is essential for correctly cleaning natural stone.

TYPES OF STONE – Does it contain “Calcium”?

Although there are many types of stone, a starting point for classifying stone is to separate natural stone into two categories – those containing calcium and those that do not. For example,

Granite.....Does not contain calcium.
Travertine.....Contains calcium.
Marble.....Contains calcium.
Terrazzo.....Contains calcium.

Different types of natural stones behave differently within the same environment. The key factor that determines how a natural stone will react to its environment as well as to cleaners and sealers is its calcium content. For example, when calcium-based stones react with acids they become etched and dull, losing their factory finish. Fortunately, they can be easily repaired. If, on the other hand, a non-calcium based stone such as granite encounters an acid, its surface does not become damaged. In short, the calcium content of the stone largely determines how the stone will react to acids, cleaners, and abrasion.

GLOSSARY

Read the glossary at the end of this document to learn more about the different types of stone.

STONE FORMATION

The first step in determining whether or not your natural stone contains calcium is to have a basic understanding of how the natural stone was formed.

GRANITE

Granite is a volcanic (igneous) rock composed of quartz crystals. Its appearance highlights these crystals and looks like it is composed of many small grains. (Marble and travertine have veins, not crystals.) Formed under intense pressure and heat during volcanic reactions, granite is primarily composed of quartz and not calcium. Granite is very dense, does not scratch easily, and does not react to most acids. Granite is often used in countertops and is generally more expensive than marble and travertine.

- Igneous (volcanic) Rock
- Primarily composed of quartz, not calcium.
- Exhibits a crystalline form
- Formed by cooling of magma
- Very dense
- Very hard
- Does not scratch with knife
- Does not react with acids

MARBLE

Marble is a metamorphic stone created when exposed to high temperatures and pressure over a long period of time. It is made of calcium and its appearance is easily distinguished because of its veins. When scratched, it always exhibits a white mark exposes its calcium content. The darker the marble, the more color it has and the less calcium. The color comes from added impurities. For example, red is iron. Green is algae. Black is petroleum. The marble coloring affects the way marble is polished and crystallized.

- Metamorphic rock exposed to high temperatures and pressure over a long period of time
- Usually harder than travertine and much softer than granite
- Has distinct patterns (swirls and/or bands)
- Scratches easily and appear white
- Burns and/or reacts with acids
- Calcium Carbonate based
- Mineral impurities add color

TRAVERTINE

Travertine is sedimentary rock formed near natural hot springs and is composed of calcium. Its appearance has many voids. Some are shaped like fissures extending across the stone. All the holes are filled with a “filler” material making the surface flat. Travertine requires the most maintenance of any stone. Formed by underground hot water springs, the voids continue to form in the stone due to walking on them and general use. Travertine is used for flooring and walls, matches most everything, and is less expensive than marble and granite. Although gravitational pressure was used to form this type of rock, it is less dense than granite. Honed travertine comes out of the box with a 400 grit finish. One problem with travertine is that it doesn't have a consistent finish so each step (square) may be slightly different. Many new floors need to be polished in order to even out the finish.

- Sedimentary rock formed near a natural hot springs
- Voids in stone caused by water flow and evaporation
- Very fragile. Very Soft
- Very porous. Voids may be filled
- Most often a honed finish but can be polished
- Burns and/or reacts with acids
- Calcium Carbonate based. Mineral impurities add color

TERRAZZO

Terrazzo is a man made stone. It is poured into templates. Often times, these templates repeat in a pattern. Terrazzo is composed of a mixture of Portland cement and marble chips.

- Mixture of Portland cement and marble chips that can vary greatly in size.
- Identified by a brass strip
- Much more uniform than most natural stone
- Scratches like marble.
- Burns and/or reacts with acids
- Maintained and restored very much like marble

HOW TO IDENTIFY NATURAL STONE

Before you begin cleaning and sealing your stone, first identify the stone you're working with by testing it. .

- Scratch Test. Find an inconspicuous space on the stone. Lightly scratch it. Does it scratch? Did it leave a white mark? If it doesn't scratch and doesn't leave a white mark, then it's likely granite. Calcium based stones scratch easily and leave a white mark, exposing its calcium content.

- Dull Test. Test it further by applying lemon juice or an acid cleaner. If it did not dull the surface and the light continues to reflect well, then the stone is granite, ceramic tile, or porcelain. Calcium based stones react to acids. After contact, the stone becomes dull and white, and is unable to reflect a shine.

In summary, if a surface scratches easily and a white mark is exposed and it becomes dull after an acid test, then its marble, travertine, or terrazzo. However, if the surface scratches, but doesn't become dull after an acid test its likely unpolished sandstone, unpolished travertine, or waxed terrazzo.

WHAT MAKES STONE DULL?

Stone can become dull for a variety of reasons, regardless of what it's made of. All stone surfaces, whether they are composed of calcium or not, are composed of microscopic hills and valleys. In fact, every stone surface is porous to some extent. A dull stone surface is one that not reflecting light as well as it could because the surface molecules have been worn away by:

- Chemicals
 - Spills
 - Etching
 - Scratches
 - Abrasive Wear
- Counter tops become dull due to non-neutral pH cleaners, food spills, and continuous wiping.
 - Scratches and wears patterns occur on floors due to friction, abrasion, and use.
 - Etching or dull spots on counter tops and vanities are caused by acidic chemicals found in food and drink.
 - Vanities become dull due to water accumulation.

IT'S THE WATER

Water is the most abundant element on earth. Water sustains us. Water purifies us. But it's not the same for stone, glass, metal, and a host of other natural materials. When addressing stone maintenance, whether it's cleaning, restoration, or sealing, remember how water has, or is interacting with stone. Water is usually the leading factor in dulling stone surfaces. Therefore, we need to protect against it using sealers.

Making matters worse is hard water. Hard water contains calcium and other particulates that bond to stone. These crystal formulations appear as white stains and droplets and can quickly dull, etch, and devalue expensive granite, marble, travertine, and other types of natural stones.



MAINTENANCE vs. COMPLETE RESTORATION

Granite, marble, travertine, and other natural stones can all recover their natural smoothness, shine, and factory finish with the right maintenance technique. The determining factor on what cleaning method is appropriate depends upon the degree of damage and type of stone. In some cases, the stone is so badly scratched and etched that it needs to be completely restored. Restoration is an expensive and time consuming process. Fortunately, in most cases, maintenance polishing can revive the stone.

Maintenance Polishing is the process is done with Maintenance Crystallizer or Polishing Powder and will help hide imperfections in counter tops, vanities, and showers. It does not remove the damage caused by scratches, heavy duty chemical burns and wears patterns. On the other hand, restoration is the process done with diamond pads. It completely removes all damage and imperfections. The result is like a new finish.

MAINTENANCE POLISHING USING CRYSTALLIZATION

The Magnesium Fluorosilicate in Stone Pro Maintenance Crystallizer bonds with the calcium in marble and other natural stones restoring natural color and increasing brilliance. Calcium Fluorosilicate is a crystal formed when the marble or other calcite stone reacts to the Magnesium Fluorosilicate. This crystal is very hard, dense and clear. The result of this process is the molecular structure has changed. The surface is much more reflective and surface damage is less noticeable. **THIS IS NOT A WAX**

WHAT IS A CRYSTALLIZER

A crystallizer or a crystallization polish is a maintenance product designed for polishing counter tops, floors, vanities, and other polished natural stone. It is a spray polish application which utilizes steel wool pads. Coverage rates can be very high. Application is also very quick. For example, using this process, one person can polish 400-800 sq.ft. per hour with a floor buffer.

Crystallization is a preparatory polish which works with the calcium carbonate in natural stone. When heat is introduced, via steel wool, a hard calcium fluorosilicate crystal is formed on the surface creating additional reflectivity, color and density.

Nay sayers who do not offer a crystallization polish think that crystallization is a wax and is bad for the stone, saying it traps moisture and rots stone. Incorrect!

If crystallization was a wax, then a crystallized floor would not stain or etch. A floor that is polished using a crystallizer will still stain. It is also still susceptible to etching when coming in contact with acidic liquids. As a result, a crystallized surface always needs to be sealed after the crystallization process.



CRYSTALLIZATION ADVANTAGES

- It never has to be stripped
- Increases color
- Increases reflectivity
- Increases slip resistance
- Increases hardness
- Ideal for Marble and Terrazzo
- No vacuuming, neutralizing or rinsing needed
- Lower labor cost – one person can do 400 – 600 sq. ft. per hour (floors)

CRYSTALLIZATION DISADVANTAGES

- Stone must be 100% dry prior to application
- Surface must be swept thoroughly before and after polishing
- Steel wool fragments will rust if not removed

HOW IT WORKS:

The magnesium fluosilicate in the Stone Pro Crystallizer bonds with the calcium in marble and other natural stones and forms a new crystal layer that is hard, dense, and clear, restoring the stone's natural color and increasing brilliance. Because it is not a wax, the stone retains the ability to breath and avoids bubbling, chipping, and peeling associated with waxes. The resulting new layer does not need to be stripped like traditional waxes and is not slippery.

To learn more about maintenance polishing for both granite and marble, read the following instruction guides:

- **HOW TO POLISH GRANITE**
- **HOW TO POLISH MARBLE AND TRAVERTINE**

GLOSSARY

Acid Sensitive Stone:

Stones that usually contain calcium that will react with acids; this reaction results in removing or etching the polish on the stone – stones included in this group are marble, limestone and travertine. Common household acids include citrus juice such as lemon, some cosmetics, or cleaners with acidic compounds.

Ceramic Tile:

Tiles that are made by shaping a nonmetallic mineral, such as clay, and then fired at a high temperature, which gives the tile its hardness.



Granite:

Extremely hard and dense igneous rock having a visibly crystalline texture; generally composed of granular flecks of feldspar, mica and quartz spread consistently

Grout:

A thin mortar poured and used to fill cracks and spaces in a stone or tile installation.

Limestone:

A sedimentary rock composed of the mineral calcite (calcium carbonate) or dolomite.

Marble:

A hard, crystalline, metamorphic rock formed by alteration of limestone or dolomite, often irregularly colored by impurities. Marble is both durable and beautiful and can stand heavy use but can be stained or scratched.

Porcelain Tile:

Porcelain Tiles are formed under extremely high pressure and fired at very high temperatures. This makes these tiles much denser and stronger than the common glazed ceramic tiles.

Quartzite:

Quartzite is a sandstone that has been recrystallized or cemented by silica.

Sandstone:

A sedimentary stone that is a type of limestone that was deposited on ancient sea beds. These stones vary widely from fragile chalky seashell encrusted with an open texture to a denser harder stone suitable for flooring materials.

Slate:

A metamorphic stone that is characterized by a sheet-like structure with parallel cleavage, which permits it to be split readily into thins, smooth sheets. It is composed of clay, quartz and mica and comes in a multitude of colors.

Terrazzo:

A colorful decorative flooring material made of marble or stone chips embedded in a cement or epoxy binder. After the floor has hardened it is ground and polished to a smooth and durable finish. Traditionally, terrazzo floors are poured and set on site, but manufactured terrazzo tiles are also available.

throughout the stone.

Travertine:

A form of limestone distinguished by layered structures of pores and cavities producing an open texture. It is formed from calcium carbonate that is deposited from the water of mineral springs (especially hot springs) or streams holding lime in solution.

VOC or Volatile Organic Compounds:

Organic chemical compounds that have high enough vapor pressures under normal conditions to significantly vaporize and enter the atmosphere, the EPA defines VOC as any organic compound that participates in a photo reaction. (All stone Pro products are V.O.C. compliant in all 50 states).