

Crystallization of Natural Stone

What is Crystallization?

The crystallization or re-crystallization method is the use of a chemical with a steel wool pad to create friction and heat on the surface of marble. This method produces an effect that could be called a "shine" to the stone.

The main chemical used are fluorosilicones. These fluorosilicate compounds contain an enamel wax. The chemical also contains an acid to break down the calcium carbonate within the top layer of the stone, attaching the fluorosilicones and creating a new compound called calcium fluorosilicate. This imperious film blocks the pores of the stone which later results in spalling and cracking.

While the immediate results have produced a shine, The end result also leads to a list of many problems and issues.

The first issue is that the scratches that were present before restoration are still there, just shiny. As you may know, whether polished or not, these scratches and pits collect dust, dirt, and grime during the course of the day. Especially when you run your swiffer mop to clean. These little grit grinders eventually sand off the surface shine. So the restoration company using crystallization needs to come again.

The second issue is financial. Since re-crystallization consists of wax, it is easily worn off and needs to be re-applied. The shine never lasts. Thus leading more business to the original unorthodox company. Don't worry... they usually have you sign an annual contract for them to service month to month.

The third issue is more scratches. Yes more. Not only from the dirt, but from the company's steel wool pads that they used to re-polish. Look closely and you will find lots of swirly scratches.

The fourth issue noticed is "Why is my marble turning orange-red and getting darker?" The reason is that the steel wool pads are leaving iron behind, which of course turns in to rust. Unfortunately it is embedded into your stone.

The fifth, and hopefully the last issue, is that the stone will dry out and begin to crack and chip easily. This is an expensive repair, but if re-crystallization were to continue, there is no use to have any repairs done.

If the re-crystallization process continues, the stone deteriorates and falls apart. Thus leading to the replacement of marble or calcite based floors.

Diamond Polishing Systems

Polishing of stone is to attain a high shine by use of fine abrasives. Marble Doctors uses diamond abrasives to resurface an area and make it scratch-free and to remove etch marks.

To acquire a true polished or honed surface, the imperfections must be grinded or sanded to the level of the damage. Depending on the depth of damage will reflect on how many steps will be needed for the repair.

Below are all the steps listed for a full natural stone restoration. Most jobs usually require the last two steps of honing and polishing. Only an experienced specialist could recognize the proper order needed to achieve the desired finish.

Step 1:

De-lippage & Flattening: This process is usually recommended when the stone was installed incorrectly. Lippage is the term given to uneven tiles that are set higher than one another. De-lippage/ground in place is recommended when the lippage exceeds 1/8 of an inch or if one desires to have a completely flat floor

Step 2:

Grinding: A very aggressive process using metal-bonded and diamond grits to remove deep scratches and lippage. Performed by using a heavily weighted floor machine with water, this process is typically dust free. The goal is to flatten the floor.

Step 3:

Honing: Similar to grinding, but not as aggressive. The grits and materials are not as coarse as those used when grinding. Honing will remove minor to moderate scratches and etch marks.

Step 4:

Polishing: Completed after the honing phase. A series of higher diamond grits are used. Diamond grit compounds in a powder or paste form may also be used to simulate higher grits. Using natural fiber pads or polyester pads and a floor machine, a final powdered abrasive mixed with water produces a slurry. This slurry is worked into the stone to produce a high shine.

Most natural polishing powders contain the active ingredient oxalic acid. Oxalic acid, also known as potassium oxalate, is an organic acid that is naturally occurring in many readily available plants. Hence, the term "natural polish".

Along with oxalic acid, other natural ingredients may be mixed in the polishing powder. These ingredients may or may not include aluminum oxide, pulverized flake shellac, and organic resins. Depending on the content of calcite within a stone, a professional stone specialist can determine how to modify these ingredients to produce optimal results.

The difference between crystallization and the natural process is the resulting compound is not changed into something other than calcite. Using the natural and ecological process to polish marble and other calcite based stones, a natural finish allows the stone to breathe and not suffocate. The stone is allowed to extract moisture from the air when it becomes dry, and also push excess moisture when it becomes to wet.

By using the natural process Marble Doctors extends the life of your marble and other calcite based stones such as travertine and limestone. A long lasting beautiful and easy to maintain polished floor is the end result.