

---

Care and Maintenance of

**NATURAL STONE**

and Tile & Grout

---



Royal Care Services, Inc.

## TABLE OF CONTENTS

<b>Forward</b>	<b>i</b>
<b>Acknowledgements</b>	<b>ii</b>
OTHER NATURAL STONE, TILE & GROUT RESOURCES	ii
<b>Care and Maintenance of Natural Stone, Tile &amp; Grout</b>	<b>2</b>
Routine Preventive Measures	2
Treating Spills	2
<b>Cleaning and Maintenance</b>	<b>3</b>
Floors	3
Newly Installed Floors	3
Newly Restored (Refinished) Floor	4
Kitchen Counter Tops	4
Treating Dried on Spills	5
For Extra Shine	5
Bath and Vanity	5
Vanity Tops	5
Removing Soap Scum	6
Treating Mildew	6
Commodes	6
How many applications of sealer are needed?	6
<b>Protecting Your Stone &amp; Grout</b>	<b>7</b>
Sealing Stone	7
Color Enhancing Sealing	7
Sealing Grout—Clear or Color sealing	7
DIY or Call in a Pro?	8
<b>Stain Management</b>	<b>9</b>
How to Remove a Stain – Poulticing Method	10
Definition of a Poultice	10
How to Prepare a Poultice and Use It to Remove Stains	11
Etching, a.k.a. “Water Stains” Or “Rings”	11
Combination “Stains”	12
<b>Ten Potential Stone Problems and what to do about them</b>	<b>13</b>
The following are the most common problems that may occur	13
1. Loss of shine	13

2. Etching	13
3. Stains	13
4. Efflorescence	13
5. Spalling, Flaking and Pitting	13
6. Yellowing	14
7. Uneven Tile (Lippage)	14
8. Cracks and Chips	14
9. White Stun Marks	14
10. Water Rings/Spots	14

**Professional Maintenance Services 15**

Fabricators	15
Stone Restoration Services	15
What is involved?	15
Tile & Grout Cleaning & Restoration	16
Cleaning and Maintenance Technicians	16

**Selecting Your Stone 17**

The Lemon Juice (and Oil) Test	17
MOHS SCALE	18
A Note on Resining	18

**Maintenance Log 19**



## Acknowledgements

Thank you to...

To the network of Certified Stone and Tile Pros ([www.stonenadtilepros.com](http://www.stonenadtilepros.com)) who generously generously contributed so much to the development of this guide, and to the others that played such an important role and shared our vision to deliver accurate information to the consumer of natural stone, tile & grout. Special thanks to Fred Hueston and Maurizio Bertoli, two highly regarded subject matter experts that contributed a wealth of information that you will find in these pages.

### NATURAL STONE, TILE & GROUT RESOURCES

#### ***WWW.STONEANDTILEPROS.COM***

Stoneandtilepros.com is rapidly becoming a household name for consumers. You can find verified quality professionals, reference a stone and tile glossary, and search an ever growing Knowledge Base. If you can't find your answer, you can 'Ask Our Pros,' and get answers to your questions from a network of seasoned stone and tile contractors, at the helm of which is Chief Technical Director, Dr. Fred (Fred Hueston, PhD).

You can access valuable and interesting 'How-to's'—including videos and print plus a host of other resources can be found.

Visit the Design Studio pages where you can get ideas and inspiration as you scroll through a gallery of stone and tile installations. You can search the natural stones database to see images and learn interesting details about marbles, granite, onyx, travertine, limestone, quartzite and more. If you are considering new stone countertops, you can get a visual idea of what your stone and edge choice would look like installed by using the *Conceptualize It* Countertop Design Tool.

#### ***WWW.MARBLE-INSTITUTE.COM***

The Marble Institute of America is the largest industry trade association.

V. 02-08 Copyright 2005 - 2008 StonePro Solutions, LLC All Rights Reserved.

Except as permitted under the United States of America Copyright Act of 1976, no part of this publication can be reproduced or distributed in any form or means, or stored in a database or any other retrieval system, without the prior written permission of the publisher.

## Care and Maintenance of Natural Stone, Tile & Grout

Natural stones—especially calcite-based stones such as marble, travertine, limestone, and many slates—have a delicate chemical composition that may interact in “strange” (damaging) ways with the cleaning solutions that were not specifically formulated for the task. Once you know WHAT to use, all you have to do is follow some basic guidelines and your natural stone installation will give you years and years of beautiful service.

### ROUTINE PREVENTIVE MEASURES

- Use coasters under drinking glasses, particularly those containing alcohol or citrus juices to avoid etching.
- Do not place hot items directly on the stone surface. Use trivets or mats under hot dishes.
- Use place mats under china, silver or other objects that can scratch the surface.
- Avoid cleaning products unless the label specifies it is safe for natural stone. This includes glass cleaners to clean mirrors over a marble vanity top or a liquid toilet bowl cleaner when the toilet sets on a marble floor.

### TREATING SPILLS

Some spills will turn out to be detrimental to stone if unattended. Orange juice, lemonade, wine, vinegar, liquors, tomato sauce, yogurt, salad dressing, perfume, after shave, the wrong cleaning products and so on, through a long list, most likely won't damage “granite” and “green marble” surfaces (at least in the short run), but will ETCH polished marble, travertine, limestone, onyx, alabaster and many a slate. Therefore,

DO pick up any spills as quickly as possible.

DON'T rub the spill, only blot it.

DON'T use cleaning products on or near your natural stone unless the label specifies that it is safe on natural marble (cultured marble is man-made, and it's basically a plastic material). This includes glass cleaner to clean the mirror over a marble vanity top, or a liquid toilet bowl cleaner when the toilet is set on a marble floor.

## Cleaning and Maintenance

### FLOORS

#### *Invest in quality cleaning tools*

A cleaning chore—any cleaning chore—is never a matter of a cleaning product only. The implements—cleaning rag, paper towel, scrubbing pad, squeegee, etc.—are important considerations as well. A good quality mop and the proper mopping bucket are critical to obtaining the best results when mopping your highly polished stone or porcelain floor.

We found that sponge mops are not the best choice for highly polished stone floors. A better choice is a

***If a cleaning product was not specifically formulated to clean while NOT interacting with the chemical makeup of the stone, assume it is not safe to be used, period.***

good sized, closed-loop cotton string mop. However, the very best are [micro-fiber mops](#).

It is a good idea to have at least a couple of mop-heads, so that when one is dirty, all you have to do is throw it into the washing machine and use another one in the meantime.

#### *Newly Installed Floors*

The best thing to have done to a brand-new polished stone floor is a detailing job by a properly trained janitor, or a professional stone refinisher. Detailing means deep-cleaning the floor virtually square inch by square inch, removing all possible grout residue or film and adhesive, taking care of possible small damages left behind by installers, or a possible few factory flaws, and open the pores of the stone by using a [heavy-duty stone, tile and grout cleaner](#) or, in extreme instances, if a grout film is still present over the surface of the tiles, [a stone safe soap film remover](#), which would also be effective at removing mineral deposit due to the presence of chelates in its formula. (Grout film could be equated to mineral deposit.) In that way the stone can “breathe” and dry properly.

For porous stones like hone-finished limestone or certain mercantile granites, the application of a good-quality [impregnating sealer](#), is recommended, especially if the floor is installed in a room where accidental spills of staining agents (i.e.: cooking oil, coffee, juice, etc.) are likely to occur.

The application of an impregnating sealer to highly polished marble and travertine, or polished high-density mercantile granites is generally not recommended.

Should you decide not to have your floor detailed,

- DON'T** damp-mop your floor immediately after installation and grouting. While you would not cause any real damage, the fine powder most likely left on the floor will be trapped in the water and may leave ugly and hard-to-remove streaks all over its surface. For the first week or so, just vacuum (being careful not to use vacuum cleaners that are worn. The metal or plastic attachments or the wheels may scratch the surface. Upright vacuum

cleaners are not recommended. Canister vacuum cleaners and central vacuum systems are the best) and dust mop (with a NON-treated dust mop or a clean, dry [micro-fiber mop](#)) your floor as often as you can. You will know it is ready to be washed when your hand remains clean (no whitish powder) after rubbing it on the floor.

### ***Newly Restored (Refinished) Floor***

**DON'T** damp-mop your floor using a solution of water and stone soap. As with any other soap, stone soap will leave a hard-to-remove deposit on the surface of the stone. Stone soaps have very limited applications and, most importantly, they are not for cleaning a highly polished stone floor. Even so-called "rinse-free" stone soaps are discouraged.

In fact, by reading the label on soap stone bottles, you will see that every so often (when you can't stand to look at your streaky and smeary floor any longer, that is!) you should be using a heavy duty stripper/degreaser to remove all the soap scum that has been accumulating on your otherwise beautiful floor by not rinsing it after damp-mopping it.

Always use a [pH neutral floor detergent](#), opposed to soap. (Even dish soap would create the same problem.)

**DON'T** damp-mop your floor using a solution of water with a commercially available cleaner, unless its label specifically indicates that it is safe to use on natural stone. Worse yet,

**DON'T** damp-mop your floor using a solution of water and vinegar. Vinegar is highly acidic and will damage the stone.

**DO** a deep-cleaning of your stone floor and grout lines when needed using a solution of water and a [heavy-duty stone, tile and grout cleaner](#).

If your floor is in a foyer or any other room with direct access to the outside,

**DO** use proper floor mats. The leather or rubber of your shoes won't damage your floor, but dirt will. It is important to have good rather than merely 'pretty' mats.'

**DO** clean your floor mats often. When they get saturated with dirt and sand they defeat their purpose.

## **KITCHEN COUNTER TOPS**

Assuming that your kitchen counter top is made either out of true or mercantile granite, green marble or soapstone or a hone-finished stone (if you have polished marble or polished travertine, then there's not much that can be done to maintain their highly glossy finish, other than ... well, never using your countertop!) there is one thing you must remember:

This firm rule applies to all stone surfaces: countertops, floors, walls, etc.

Using a "glass cleaner" or "water with a little dish soap" are common but erroneous recommendations that you may hear. Glass cleaners may turn out to be too harsh to both the stone and the sealer (if one has been applied), while water and dish soap can leave an unsanitary and unsightly film that will build up and become problematic to remove. (Wash your hands with dish soap and then rinse them under running water; observe how long and how much water it will take to rinse properly. To get the same rinsing result – which is the only one acceptable – for your countertops, you would have to rinse them with a garden hose!)

Generic household cleaners off the shelves of the supermarket are out, and specialty cleaners specifically formulated to deal with the delicate chemistry of stone are, very definitely, in order.

- DO** clean your kitchen countertop regularly with a **stone safe cleaner**. Use a higher concentration near cooking and eating areas, and diluted water for less demanding situations such as vanity tops, areas of the countertop far from the cooking and eating areas.
- DON'T** let any spills sit too long on the surface of your counter top. Clean spills up (by blotting only) as soon as you can.

### *Treating Dried on Spills*

- DON'T** use any green or brown scouring pad. The presence of silicon carbide grits in them will scratch even the toughest "granite." You can safely use the sponges lined with a silvery net, or other plastic scouring pads. REMEMBER, it's very important to spray the cleaner and let it sit for a while to moisten and soften the soil, before scrubbing. LET THE CLEANING AGENT DO THE WORK! It will make your job much easier and will be more effective.

### *For Extra Shine*

A **stone polish** can do a terrific job at brightening up your polished stone surface. Be sure that the ingredients are classified as "food-grade." As with all the products, be sure to follow the label instructions.

## **BATH AND VANITY**

### *Vanity Tops*

- DO** clean your vanity tops regularly with a **stone-safe, soap free** product.
- DON'T** take chances with cleaning your mirrors over your marble vanity tops with a regular glass cleaner. The over-spray could spill onto the marble surface and may damage it. Therefore,
- DO** clean your mirror with the same solution of water and **stone safe spray cleaner**. Even if you over-spray it, nothing bad is going to happen to your marble. TIP Rubbing alcohol works wonders for cleaning mirrors and won't harm marble.
- DON'T** use any powder cleanser, or—worse yet—any cream cleanser.
- DON'T** do your nails on your marble vanity top, or color or perm your hair nearby it.
- DON'T** put any wet bottle onto it (perfume, after-shave, etc.). Keep your cosmetics and fragrances in one of those pretty mirror trays (be sure that the legs of the tray have felts tips) or other appropriate container.
- DO** use a **stone polish** if you want to add some extra shine to your polished stone countertop surface and help prevent soiling.

### *Shower Stalls*

- DO** monitor your grout and caulk lines periodically and address any problem immediately.
- DON'T** use any cleanser, either in a powdery or creamy form.

- DON'T use any generic soap film remover, such as TILEX SOAP SCUM® or X-14 SOAP SCUM® on your polished stone shower stall.
- DON'T use any mildew stain remover, such as TILEX MILDEW STAIN REMOVER® or X-14 MILDEW STAIN REMOVER® on your polished stone shower stall.
- DON'T use any self-cleaners, such as SCRUB-FREE® and the likes, or any harsh disinfectant, such as LYSOL®
- DO clean your shower stall daily. The easiest and most effective way is, after everybody has taken a shower, spray the walls and floor of the stall with a diluted solution of water and **stone spray cleaner**, then **squeegee**.

### **Removing Soap Scum**

If you notice an accumulation of soap film (especially on the lower part of the walls and on the floor pan)

- DO use a **soap film remover** specifically formulated to be effective at doing the job of cleaning soap scum and hard mineral deposits, while not negatively interacting with the chemistry of natural stone.

### **Treating Mildew**

If mildew appears on the grout lines of your shower enclosure

- DO clean the mildew stain with a **mildew stain remover** that has been formulated to be safe on natural stone, while being very effective at removing mildew and other biological stains.

### **Commodes**

If your toilet bowl sits on a marble or other natural stone floor,

- DON'T use any generic toilet bowl cleaners. Possible spills will dig holes in your marble. Clean your bowl with a powdery cleanser and, if extra disinfection is desired, you can spray your toilet liberally with a **disinfectant spray** designated safe for stone.

### ***How many applications of sealer are needed?***

For some stones that are more porous than others, one application of sealer/impregnator may not be enough. But how will you know?

On mercantile granites that need sealing, at least two applications are recommended. Very porous mercantile granites, sandstone, quartzite, etc. may require three or more applications. When sealer can no longer be absorbed by the stone, the stone is adequately sealed.

### ***How long will it last?***

There is no absolute rule of thumb when it comes to the durability of any sealer. Generally speaking, most quality impregnating sealers interior will last 2-5 years or more. Environment plays a big role. Stones exposed to intense heat or direct sunlight will probably need to be re-sealed more often.

### ***When is it time to reseal?***

To find out if your stone is perfectly sealed, spill some water on it and wait for approximately half an hour, then wipe it dry. If the surface of the stone did not darken it means that the stone is still perfectly sealed. Be sure to test various areas, especially those areas that get more use and abuse.

## Protecting Your Stone & Grout

### SEALING STONE

Contrary to what your perception may be when you hear the word sealer, most sealers for stone are below-surface products and will not alter in any way, shape or form the original finish produced by the factory. They will not offer protection to the surface of the stone, either. They will only go inside the stone by being absorbed by it (assuming that the stone is porous enough to allow this to happen) and will clog its pores, thus reducing its natural absorbency rate. This will help prevent possible accidental spills of staining agents from being absorbed by the stone.

There is no blanket rule when it comes to sealing natural stone. Marble (especially all those mercantile marbles that are actually compact limestone) and travertine are NOT very porous. If you don't believe this, spill a few drops of water, say, on a polished travertine tile, and observe how long it will take to be absorbed (the area under the water would become darker). A very long time, if ever!

On the other hand, all granites must be sealed. Granite is indeed more porous than marble and will stain if not protected with a good quality impregnator-type stone sealer.

Some "granites" are so porous, that no sealer will do a satisfactory job at sealing them 100% for for a long time.

Sealers for stones, which are below surface, penetrating-type sealers (better referred to as impregnators), are designed to do one thing and one thing only: clog the pores of the stone to inhibit staining agents from being absorbed by it.

In fact, in some instances, "weird" problems that may appear to be etching on "granite" countertops turns out to be that the residue of sealer left on the surface of the stone (nothing went inside it) was being etched, certainly not the stone. In these instances, once the sealer is professionally removed, everything is fine.

*Note: Sometimes, marks of corrosion (etch marks) that an acidic substance will leave behind when coming in contact with the surface of some stones may look like water stains, or water rings, but they are neither stains, nor were they generated by water. The deriving (surface) damage has no relation whatsoever with the porosity of the stone (which determines its absorbency), but is exclusively related to its chemical makeup. No sealer in the world will do anything to prevent this. See the section on Stain Management for more information.*

### **Color Enhancing Sealing**

While impregnating sealers will not alter the appearance of your stone, on tumbled marble, low-honed finished limestone and travertine, honed (black) granite, etc. a **color enhancing (impregnating) sealer** will protect the stone while bringing out its color, giving it a wet (i.e. darker, not glossy) look. It will at the same time provide good protection from water based staining.

### SEALING GROUT—CLEAR OR COLOR SEALING

Grout is porous and will absorb liquids which can potentially stain. Sealing your grout provides a protective barrier that not only protects it from stains, it makes routine cleaning and maintenance easier. Grout can be sealed with a clear sealer or it can be color sealed. Color sealing has the added advantage that it allows you to completely change the color of your grout whether it is just for a new look or to cover up stained and discolored grout.

## DIY OR CALL IN A PRO?

Is sealing a job for the homeowner or should you hire a qualified professional to do it for you?

Consider the following pros and cons.

If you do it yourself, you save on labor costs.

However think about the following:

Consider the magnitude of the job and how comfortable you are with a DIY project. Are you prepared to get on your hands and knees?

Has the floor been thoroughly and completely cleaned? If not, you take the chance of sealing in dirt and debris.

Sealer not completely removed from the surface of the stone may cause problems including a haze on the the stone that may develop as the sealer dries completely. Once it is dried on the surface, sealer can be very difficult to remove.

Different sealers perform differently in different environments and on different stones. A pro will know which is the best sealer for the job. A professional uses equipment and techniques that equip them to get the job done efficiently.

## Stain Management

We all know what a stain is, right? ... Or do we ...

Let's start by saying that a stain is a discoloration. So far, so good.

The fact is, however, that not all discolorations are stains. To illustrate the point, let's take, for example, a piece of common fabric. Fabric is typically absorbent. Therefore, if we spill some liquid onto it, the material will absorb it. If it is only water, it will leave a temporary stain. In fact, once it dries, the fabric will go back to its original color (plus, maybe, some mineral deposit can we can just brush away), but if coffee, or cooking oil is spilled on it a stain will occur because the fabric will absorb the staining agent and change its color in a permanent way, unless we do something to remove the agent from the fabric.

On the other hand, if bleach is spilled on that same fabric, a discoloration will occur, but it can hardly be defined as a stain because it is actually a permanent damage to the dye that originally made the color of the fabric.

---

**A true stain is always darker than the stained material.**

If it appears as being of a lighter color it is not a stain but either a mark of corrosion (etching) made by an acid, or a caustic mark (bleaching) made by a strong base (a.k.a., alkali). In other words, a lighter color "stain" is in fact always a surface damage and has no relation whatsoever with the absorbency rate of the damaged material – stone or whatever.

*There is not a single exception to this rule.*

---

As with the fabric example, when it comes to natural stone there are stains that are in fact stains, and there are "stains" that are actually discolorations that are due to something else.

All stones are, more or less, absorbent. One may say that diamonds or gemstones are not absorbent. That's right, but a gemstone is not actually a stone. It is in fact made of one crystal of one single mineral. All other (less noble) stones are the composition of many crystals, either of the same mineral, or of different minerals bonded together. The "space" in between these molecules of minerals is mostly what determines the porosity of a stone. That said, what is next is the fact that the porosity of stones varies greatly, and so does, of course, their absorbency. Some of them are extremely dense, therefore their porosity is minimal. What this translates into is the fact that the absorbency of such types of stone is so marginal that—by all practical intents and purposes—can be considered irrelevant. Some other stones present a medium porosity, and others at the very end of the spectrum are extremely porous. Because of their inherent porosity, many stones will absorb liquids, and if such liquids are staining agents, a true stain will occur.

***A true stain is a discoloration of the stone produced by a staining agent that was actually absorbed by the stone.***

Other 'discolorations' have nothing to do with the porosity (absorbency) of the stone, but rather are a result of damage to the stone surface. All those 'stains' that look like 'water spots' or 'water rings' are

actually marks of corrosion (etches) created by some chemically active liquid (mostly—but not necessarily limited to—acids) which had a chance to come in contact with the stone. All calcite-based stones such as marble, limestone, onyx, travertine, etc. are sensitive to acids. Therefore, they will etch readily (within a few seconds). Many a slate, too, will etch, and so will a few “granites” (those that instead of being a 100% silicate rock are mixed with a certain percentage of calcite.)

Now let's see what to do to remove stains.

## HOW TO REMOVE A STAIN – POULTICING METHOD

### *Definition of a Poultice*

What's a poultice? It is the combination of a very absorbent medium (it must be more absorbent than the stone) mixed with a chemical, which is to be selected in accordance with the type of stain to be removed. The concept is to re-absorb the stain out of the stone. The chemical will attack the stain inside the stone, and the absorbent agent will pull them both out together.

The absorbent agent can be the same all the time, regardless of the nature of the stain to be removed, but the chemical will be different, in accordance with the nature of the staining agent, since it will have to interact with it.

The absorbent part of a poultice could be (in order of preference), talcum powder (baby powder), paper-towel or diatomaceous earth (the white stuff inside your swimming pool filter) for larger projects.

'Professional poulticing kits' are really unnecessary. Anybody with no experience whatsoever can make their own homemade poultice.

As we said before, the chemical must be selected in accordance with the nature of the staining agent. There are five major classifications of stains:

1. **Organic** stains (i.e. coffee, tea, coloring agents of dark sodas and other drinks, gravy, mustard, etc.)
2. **Inorganic** stains (i.e. ink, color dyes, dirt – water spilling over from flower and plant pot, etc.)
3. **Oily** stains (i.e. any type of vegetable oil, certain mineral oils – motor oil, butter, margarine, melted animal fat, etc.)
4. **Biological** stains (i.e. mildew, mold, etc.)
5. **Metal stains** (i.e. rust, copper, etc.)

The chemical of choice for both organic and inorganic stains is hydrogen peroxide (30/40 volumes, the clear type—available at your local beauty salon. The one from the drugstore is too weak, at 3.5 volume). Sometime, in the case of ink stains, denatured alcohol (or rubbing alcohol) may turn out to be more effective.

For oily stains our favorite is acetone, which is available at any hardware or paint store. (Forget your nail polish remover. Some of them contain other chemicals, others contain no acetone whatever.)

For biological stains, one can try using regular household bleach or a [mildew stain remover](#) designated safe for stone.

For metal stains, our favorite is a white powder (to be melted in water) called Iron-out™ which can be found in any hardware store.

### ***How to Prepare a Poultice and Use It to Remove Stains***

#### ***WEAR RUBBER GLOVES ALL THE TIME, WHILE HANDLING CHEMICALS!***

If you've chosen talc powder (baby powder) as your absorbent medium,

1. Mix it—using a metal spatula or spoon—in a glass or stainless steel bowl, together with the chemical, to form a paste just a tad thinner than peanut butter (thin enough, but not runny.)

If you are attempting to remove a metal (rust) stain, first melt the Iron-out™ with water—according with the directions on the container—then mix it with an equal amount of talcum powder, adding water if it turns out to be too thick, or talcum if it is too runny.

2. Apply the poultice onto the stain, going approximately ½" over it all around, keeping it as thick as possible (at least ¼").
3. Cover the poultice with plastic wrap, and tape it down using masking tape.
4. Leave the whole thing alone for at least 24 hours, then remove the plastic wrap.
5. Allow the poultice to ***dry thoroughly!*** It may take from a couple of hours to a couple of days or better, depending on the chemical. ***Do NOT peek!*** This is the phase during which the absorbing agent is re-absorbing the chemical that was forced into the stone, together (hopefully!) with the staining agent, and you do NOT want to interrupt that process.
6. Once the poultice is completely dry, scrape it off the surface of the stone with a plastic spatula, clean the area with a little squirt of ***stone safe spray cleaner***, then wipe it dry with a clean rag or a sheet of paper-towel.

If the stain is gone, your mission is over! If some of it is still there, repeat the whole procedure (especially in the case of oily stains, it may take up to 4 or 5 attempts). If it didn't move at all, either you made a mistake while evaluating the nature of the stain (and consequently used the wrong chemical), or the stain is too old and will not come out, or it was not a stain, but another type of discoloration.

If you decide to use a paper-towel instead of talc powder, make a "pillow" with it (8 or 10 fold thick) a little wider than the stain, soak it with the chemical to a point that's wet through but not dripping, apply it on the stain and tap it with your gloved fingertips to insure full contact with the surface of the stone. Then take it from step 3 above.

### ***Etching, a.k.a. "Water Stains" Or "Rings"***

Polished marble, travertine, onyx, limestone, etc. are all calcite-based stones, and as such are affected by pH active liquids, mostly acidic in nature. In layman's language, when an acidic liquid gets on a polished marble, travertine, many a slate, etc. surface, it etches it on contact. That is, it leaves a mark of corrosion that looks like a water-stain or ring. Such surface damage has nothing to do with the absorbency rate of the stone (typically quite low, anyway), but exclusively with its chemical makeup, which, as mentioned before, is mostly calcite (Calcium Carbonate, CaCO<sub>3</sub>). Trying to remove the "stain" by poulticing it would be useless exercise, since it is not a stain, no matter what it looks like.

So, how do you remove a chemical etch-mark, which, as seen, is not a stain but a surface damage?

You don't! In fact an etch mark can be effectively compared to, and defined as, a shallow chemical scratch. A scratch is something missing (a groove), and nobody can remove something missing. It would be like trying to remove a hole from a doughnut! The only thing one can do is to eat the doughnut, and ... the hole is gone! Same thing with a scratch: you must actually remove whatever is around the groove, down to the depth of the deepest point of the scratch.

You are actually facing a full-fledged—though small in size—stone restoration project! Is this a task for the average homeowner?

The answer is: Maybe.

If it is polished marble or travertine or onyx, then there's hope. If it is hone-finished marble or travertine, or hone-finished slate (like a chalk-board), or mixed "granite", then you probably should hire a professional stone refinisher. If it's a cleft-finished slate (rippled on its surface), then nobody can actually do anything about it, other than attempt to mask it by applying a good quality [stone color enhancer](#).

While marble and other calcite based stones are vulnerable to acids, granite is much more resistant. In fact, the only acid that will etch polished granite is hydrofluoric acid, commonly found in rust removers.

If the etch is light (the depth is undetectable by the naked eye, and it looks and feels smooth, then a [polishing compound for marble](#) will work quite well without requiring the experience of a professional and no specific tools are needed, other than a piece of terry cloth.

### ***Combination "Stains"***

Finally, we may have a combination of a stain with etching. For example, if some red wine is spilled on an absorbent polished limestone, then the acidity of the wine (acetic acid) will etch (corrode) the surface on contact, while the dark color of the wine will stain the stone by being absorbed by it. In such a case, first you remove the stain by poulticing (hydrogen peroxide), and then repair the etching by refinishing the surface.

# Ten Potential Stone Problems

## *And what to do about them...*

Marble, granite, limestone and other decorative stone are durable materials that will last a lifetime. However, if not installed correctly or properly cared for problems may result that will shorten its life.

### THE FOLLOWING ARE THE MOST COMMON PROBLEMS THAT MAY OCCUR

#### ***1. Loss of shine***

The loss of the high polish on certain marble and granite can be attributed to wear. This is especially true of marble, since it is much softer than granite. When shoes track in dirt and sand, the bottoms of the shoes can act like sandpaper on a stone floor surface and over time will wear the polish off.

A stone restoration professional can restore the polish.

#### ***2. Etching***

The dull, whitish spot created when liquids containing acids are spilled on marble is called etching. Marble and limestone etch very easily. Granite is very acid-resistant and will rarely etch. To prevent etching, avoid using cleaners and chemicals that contain acids. Light etching can be removed with a little [marble polishing powder](#). Deep etching or large areas will require the services of a restoration professional.

#### ***3. Stains***

Some stone surfaces can become stained easily if they are not properly sealed. Many foods, drinks, ink, oil and rust can cause stains. Most stains on stone can be removed. For some, more difficult stains, professional techniques by a stone restoration provider may be the only hope. Permanent stains can occur but not often. For more information, see the Stain Management section in this guide or visit the Solution Center at [www.stoneandtilepros.com](http://www.stoneandtilepros.com).

#### ***4. Efflorescence***

Efflorescence appears as a white powdery residue on the surface of the stone. It is a common condition on new stone installations or when the stone is exposed to a large quantity of water, such as flooding. This powder is a mineral salt from the setting bed. To remove efflorescence do not use water. Buff the stone with a clean polishing pad or #0000 steel wool pad. The stone will continue to effloresce until it is completely dry. This drying process can take several days to as long as one year. Do not seal the stone until any efflorescence is gone.

#### ***5. Spalling, Flaking and Pitting***

If your stone is developing small pits or small pieces of stone are popping off the surface (spalling) then you have a problem. This condition is common on stone exposed to large amounts of water or when de-icing salts are used for ice removal. Like efflorescence, mineral salts are the cause for spalling and pitting. Instead of the salts depositing on the surface (efflorescence) they deposit below the surface of the stone, causing pressure within the stone, causing stone spalls, flakes or pits. Unfortunately once a stone begins to spall it is almost impossible to repair. It is recommended that the stone be replaced.

## ***6. Yellowing***

There are several reasons why a stone will turn yellow: Embedded dirt and grime can give the stone a yellow, dingy look. Waxes and other coatings can yellow with age. Certain stones will naturally yellow with age as a result of oxidation of the iron within the stone. This is especially problematic with white marbles.

If the yellowing is caused by dirt or wax build up, have the stone cleaned with an alkaline cleaner or wax stripper. This may be a job best left to professionals. If the yellowing is the result of aged stone or iron oxidation, it is not coming out.

## ***7. Uneven Tile (Lippage)***

Lippage is the term given to tiles that are set unevenly. In other words, the edge of one tile is higher than the next and is the result of a poor installation. If the lippage is higher than the thickness of a nickel, it is considered excessive and the tile will have to be ground by a restoration contractor to flatten the floor.

## ***8. Cracks and Chips***

Cracks in stone can be caused by settling, poor installation, inadequate underlying support or excessive vibration. Chips can result from a bad installation or when a heavy object falls on a vulnerable corner. Repairs can be done by a professional stone restoration contractor by filling with a color matched polyester or epoxy.

## ***9. White Stun Marks***

Stun marks appear as white marks on the surface of the stone and are common in certain types of marble. These stuns are the result of tiny explosions inside the crystal of the stone. Pin point pressures placed on the marble cause these marks. Women's high heels or blunt pointed instruments are common reasons for stun marks. Stun marks can be difficult to remove. Grinding and/or honing can reduce the number of stuns, but some travel through the entire thickness of the stone.

## ***10. Water Rings/Spots***

Water rings and spots are very common on marble and other natural stone surfaces. They are either areas that have become etched or are from hard water minerals such as calcium and magnesium that are left behind when water evaporates, leaving a ring or a spot. To remove either type of these spots, use a [marble polishing powder](#). Moderate to severe etching or larger damaged areas will require professional honing by a stone restoration contractor.

## Professional Maintenance Services

What services might you need as a homeowner to care for your stone? What are the various disciplines within the stone and tile industry that you may need and what services do each offer? What are the criteria you need to look for when you need to hire someone?

First, before you hire any contractor, check them out. Don't hesitate to ask for references. Contact the Better Business Bureau (<http://www.bbb.org>) and licensing authorities (<http://www.contractors-license.org>). To locate a quality stone professional in your area, visit [www.stoneandtilepros.com](http://www.stoneandtilepros.com). Each of the contractors and service providers listed in the directory has been verified, signed a Statement of Professional Integrity and a Commitment to Ongoing Education and have submitted their license information.

### FABRICATORS

Most fabricators do not offer maintenance services, so why include fabricators in this section? Simple. The selection of a fabricator should be your first and most important maintenance consideration. A good fabricator will be qualified to make your installation a successful one from selecting the right stone for the environment it will be in to accurate templating to seam placement to correct installation. Any compromise in any one of these vital aspects will result in maintenance problems. Don't let price be your deciding factor. It just may end up costing you in the long run.

### STONE RESTORATION SERVICES

Generally speaking, restoration of stone is the restoring of worn stone to the state in which it was installed. It may also entail the altering of the stone's original factory finish to match a desired finish of the installation's owner or management. In some cases an owner may desire a polished surface to be honed or visa versa.

Restoration is a process that can only be done by a professional stone restoration company. Your typical maintenance/janitorial or tile & grout cleaning company will not have the proper tools or experience to restore natural stone.

#### *What is involved?*

Restoration of marble, granite, limestone, travertine or other natural stone involves the removal of scratches and/or other damage from the surface of the stone. The optimal method is mechanical abrasion known as diamond grinding. Diamond grinding gives better clarity and reflectivity than other methods that can be used, such as the use of sanding screens, honing powders or crystalization. A stone floor that has been restored with diamonds will also retain its look longer than it will with the use of these other methods. While the use of diamonds may cost you more in the beginning, having to have your floors done every 4-6 years compared to every 1-2 years (as with other methods) costs you less in the long run.

Natural stone reflects light and does not need a topical coating or wax to achieve this desired finish. It only needs a series of diamond grits used in the proper order by a craftsman who is experienced in their use. This is followed by a careful polishing technique that can only be mastered through experience. A restoration professional will also take care to protect the surrounding surfaces from damage. The diamond grinding technique involves large amounts of water and this could be damaging to wood and carpet if measures are not properly taken to ensure the use of water was kept to a minimum and protection against splatter used.

## TILE & GROUT CLEANING & RESTORATION

A properly trained tile and grout restoration contractor can clean and restore your tile and grout and make it look brand new. Missing grout and broken tiles can be replaced. Grout can be sealed to inhibit staining or color sealed to hide stains that can't come out or to simply change its color completely for a fresh new look.

## CLEANING AND MAINTENANCE TECHNICIANS

What should you be concerned with when hiring a janitorial or cleaning company when you have natural stone? First and foremost, always ask the prospective cleaning professional if they have been specifically educated in natural stone maintenance.

By far, one of the most common causes of damage to marble and other calcite based stones is the wrong cleaning product has been used on or near the stone which resulted in etching, sometimes so severe there is nothing that can be done short of having a restoration contractor mechanically polish out the damage.

A properly trained cleaning professional will have been trained to know what products to use and which to avoid. They will also know to look for and recognize various potential problems and be able to point them out to you before they become serious.

Janitorial companies trained in natural stone care will know the techniques and products to use to preserve and maintain polished marble floors. Some also include sealing in their menu of services.

For a listing of maintenance professionals educated in natural stone care, visit [www.stoneandtilepros.com](http://www.stoneandtilepros.com).

## SERVICES A STONE RESTORATION CONTRACTOR CAN PROVIDE

**Grinding** – Grinding will remove deep scratches and lippage (uneven tile edges). This process is done by special floor machines with diamond abrasive pads and water that creates no dust.

**Seam Polishing** – very visible seams in countertops can be filled and mechanically polished to virtually disappear.

**Honing** – Honing will remove minor scratches and wear from everyday foot traffic. This process is also done by machine with diamond abrasive pads and water that creates no dust.

**Polishing** – Gives marble or natural stone the sheen you want, enhance the veining in marble and to protect the marble or stone from everyday traffic and spills. The same compounds that are used in the fabricating process are utilized.

**Alter a Finish** – A stone's finish can be changed. For example, a honed finish can be changed to a polished finish and vice versa. Special brushes and techniques allow for additional decorative finishes.

**Cleaning** – Removes dirt, stains, bacteria and also remove waxes and polymers that have become embedded. Cleaning alone will not change the physical appearance of the stone (remove etch marks and scratches).

**Sealing** – To inhibit staining an impregnating sealer is applied. Some more absorbant stones may require multiple applications.

**Color Enhancing** – The use of penetrating sealers/impregnators formulated to enhance or enrich the color of your stone.

**Crack & Chip Repair** – Cracks and chips in both marble and granite can be filled.

**Fill Pits and Blemishes** – Both limestone and travertine imperfections are filled at the factory. Unsightly blemishes that occur when factory fill fails or new ones develop can be filled.

**Stripping** – Remove coatings that can block a stone's ability to breathe which causes spalling (when the stones crack, pop and shale). Some examples of common coatings are crystallization, janitorial waxes, polyurethane, etc.

**Grout Cleaning and Sealing** – Dirt loves to hide in grout. Brushes cannot penetrate into the micro pores to get all of the contaminants out. Grout can be cleaned to like new, and then sealed to facilitate easier ongoing maintenance.

## Selecting Your Stone

Proper care and maintenance of stone starts with proper selection. It is essential that when you are contemplating a new stone installation that you carefully select your fabricator. A good fabricator will be qualified to help you make a selection that is appropriate for the environment that it will be in and the final result will be one you will be pleased with and will endure beautifully.

With that in mind, following are some rules of thumb to arm yourself with:

Calcite based stones—marbles, travertines, limestone, etc. will etch when acid comes in contact with it, so special care will have to be taken if using these stones in kitchens or other places where the likelihood is high that acidic liquids could be spilled on it. They are a relatively soft stone as well, so this should also be considered. (See the MOHS Scale below.)

Granite is an excellent choice for kitchen countertops since it is not vulnerable to acids and it is very hard (7 on the MOHS scale), so it doesn't scratch easily. Refer to the Lemon Juice and Oil Test for making your final selection.

Soapstone is a very soft stone made of a variety of impure talc. (Talc is a 1 on the MOHS scale.) It is a dense mineral that develops a warm patina as it wears and is often stain resistant.

Sandstone is a porous, durable sedimentary rock composed of cemented sand-sized grains, predominantly quartz. It is categorized by the most popular bonding agents such as silica, calcium, clay, and iron oxide. Sandstone is commonly used for flooring, countertops, and vertical surfaces in both interior and exterior environments.

Quartzite is a common mineral (silicon dioxide (SiO<sub>2</sub>)) and is usually colorless or white, although it may be colored by impurities. It has vitreous luster, conchoidal fracture, and is 7 on the MOHS\* scale. There are several varieties of quartz, including rock crystal, amethyst, chalcedony, and agate. It is commonly used for counter tops, flooring, showers, and vertical surfaces.

### THE LEMON JUICE (AND OIL) TEST

*The benchmark test to determine suitability of stone for your kitchen countertops*

*by Maurizio Bertoli*

It is time now to select the stone for your kitchen countertops. What do you look for?

Two things: Absorbency and acid sensitivity. You do NOT want a "granite" too darn absorbent, and you do NOT want a "granite" that is mixed with calcite (the main component of marble and limestone.). Line samples of any stones you are considering on a table or countertop, dust them thoroughly then spill a few drops of lemon juice and cooking oil on each one of them.

If you notice that where the juice and the oil hit the stone its surface turns dark just about immediately, you take those scraps and dump them in the garbage can without a second thought! If you notice that the juice and the oil take a little time to get absorbed (a half a minute or better), then you have a stone whose absorbency can be effectively controlled with a good-quality impregnator. If you finally notice that some samples will not absorb anything within, say, half an hour or so, then you may have a winner. That stone will not even need to be sealed!

Now, how to eliminate the word 'may' from the equation? The answer resides in another question: Why using lemon juice instead of, say plain water? Because, as mentioned above, you're not just looking to determine the absorbency of the stones you're considering, but you also want to determine that your samples are 100% silicate rocks (whether true granite or not), opposed to some stones—still traded as granite—that are mixed with various percentages of calcite. If there's even a little calcite in the stone, it will react to the high acidity of the lemon juice (citric acid) and, when you wipe your spills dry, you will notice a dull spot of the same shape of the lemon drops. In such case, once again, off into the discard pile they go! If instead it's still nice and shiny under where the drops were, then you eliminated the 'may' factor!

## MOHS SCALE

In 1812 the Mohs scale of mineral hardness was devised by the German mineralogist Frederich Mohs (1773-1839), who selected the ten minerals because they were common or readily available. The scale is not a linear scale, but somewhat arbitrary. An item with a higher MOHS value can scratch an item with a lower MOHS value. A lower rated item cannot scratch a higher rated one:

1. Talc
2. Gypsum
3. Calcite (most marbles)
4. Fluorite
5. Apatite
6. Feldspar
7. Quartz (Granite)
8. Topaz
9. Corundum
10. Diamond

Kitchen countertops with a 7+ are considered excellent, a 6 good, a 5 poor (because knives can scratch) and a 4 or below inadvisable. When sediment and grit are harder than the surface, they will scratch and harm the stone.

### *A Note on Resining*

Resining is a procedure that was introduced to the stone world by the Italians not too long ago to improve on the natural characteristics of certain stones, namely certain “granites” that are either too porous, or inherently prone to having a high percentage of natural flaws, such as fissures, pitting, etc.

The “resining” of a slab is not done by the factories that process blocks into slabs. It is rather done by separate high-tech facilities where the slabs are delivered as they come out from the gang-saw, and before one of their two sides is further processed by grinding, honing and polishing. The slabs are enclosed in a vacuum-filled chamber, and a flowing resin (mostly ester-epoxy) is applied onto it. The vacuum environment helps the resin being deeply absorbed into the stone. After proper curing time, the slabs are sent back to the original processing plants, where they will be calibrated, ground, honed and polished. The resin will be totally eliminated from the polished surface of the slab and it will be exposed only as a filler of the possible natural fissure and pits of the stone and that would be otherwise unfilled and more or less obvious.

Is there anything wrong about such a procedure? Not really. There is indeed a lack of data about the long-term effect (if any) of the resin inside the stone, but there are solid reasons to believe that nothing bad will come from it. The type of resin, ester-epoxy has been used in the stone industry for a few generations already and it’s the base of a few impregnator/sealers, as well. Once cured, such resin is chemically inert (thus totally safe) and doesn’t react with any chemical, except Methylene Chloride.

There are, however, a couple of things to be taken into consideration:

- 1) Sometimes the “resining” process is used to “upgrade” slabs. Translation: by resining the low-grade slabs they will become “good.” If the resining is done to eliminate the absorbency of the stone or to fill the natural pits, that is okay, but if it is done to mask some bad slab ... well, you fill in the blanks. This is just another reason why the reputation of your fabricator is paramount. A good fabricator will never buy “doctored” slabs!

- 2) While you could put a hot pot or pan right out of the stone onto "granite" that was not resined, you could NOT do that if the slab had been resined. Irreparable damages to the resin may occur.
- 3) Certain resins may turn out to be photosensitive and its color altered over time if exposed to UV rays.

All in all, however, "resining" is good (with the limitations listed above). Even "granites" that wouldn't normally make the list of preferred stones would become more than acceptable if "resined."

# Maintenance Log

Use this log to record significant information regarding your stone, tile & grout installations.

Site	Event	Date	Comments, Stone Name, Product(s) Used

NOTES: