

surface BUZZ

- The Essential Guide to Kitchen Countertops

— Featuring Consumer Buying Guide, Care Tips, and More!

- ASK OUR PROS: Stain Removal Options

- KID'S PAGE: All About Tiles

— Including how-to video for making your own cool tiles



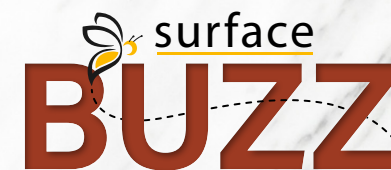


from the editor

the Kitchen Countertop Edition

Are you shopping for new kitchen countertops or looking for answers for caring for your countertops to maximize their life and beauty? You'll love this edition! The focus is all about kitchen countertops. You will find lots of good information, including a robust guide with valuable tips from our PROS for selecting, purchasing, and caring for new countertops. Dr. Fred answers your submitted questions about stain removal. Our ever-popular Kids' Page features a fun and educational tile making project.

Enjoy!



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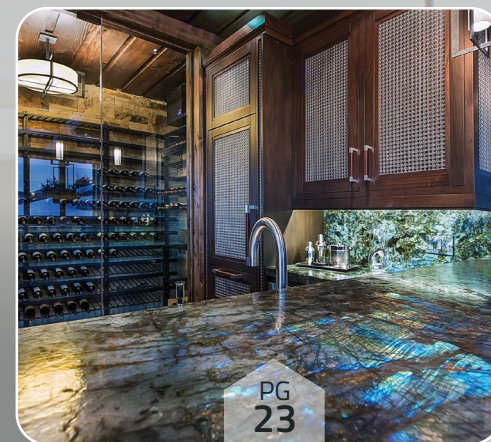
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Cover image granite kitchen from Southeast Stone - www.southeaststone.net



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Did You KNOW?

In keeping with the theme of this special issue, we thought we'd share some interesting little fun facts about your stone countertops.



From quarry to countertops, it all starts here.

Ever wonder where your stone got its name?

Stone is often named according to the location where it was quarried. However, there is no set standard or guideline for naming stone. For this reason, the same stone can have numerous names.

A rose by any other name

Be aware. Some stones are actually mis-named. For example, there are some stones sold as quartzite that are actually marble.

Kids don't try this at home without adult supervision!

Stone won't melt or burn in fire. It takes very high and prolonged heat exposure, from a blow torch for example, to melt stone.

While we are on the subject of heat...

...marble does not hold it. That's why marble countertops are popular for bakers and ice cream parlors. The marble keeps the dough cool during kneading and rolling. Frozen marble slabs are great for making ice cream and frozen desserts.

How heavy is stone?

On average, natural stone weighs about 160 pounds per cubic foot, which is about 15 or 20 pounds per square foot for a 3 centimeter slab.

Speaking of the weight of stone...

How can it safely be moved from point A to point B? Within a stone handling facility, cranes and powered industrial trucks and other lifting devices are used to transfer slabs.

On the job site, highly trained technicians use ramps, carts, lifts, and other equipment. Safety is a major concern, and technicians are mentored and required to go through rigorous training programs. They also attend monthly safety meetings. Regular equipment checks and inspections are conducted. Sometimes, despite all the precautions, accidents with stone slabs result in serious or fatal injury.

How about we move along to something more lighthearted?

Here's a stone trivia trick question, just for kicks.

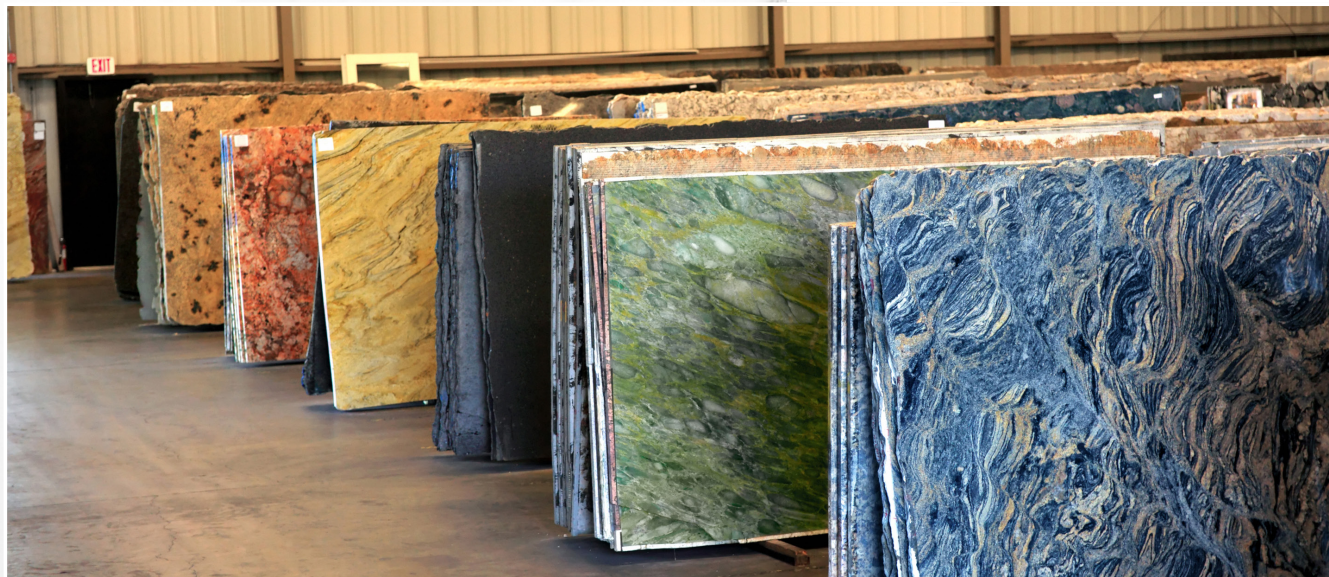
What does granite have in common with music? Rock of Ages is a granite quarry in Vermont. Rock of Ages is also the title of a hymn by Thomas Hastings and a rock and roll song by Def Leppard.

Do you know why cutting boards are recommended for granite countertops?

It isn't to protect the granite from the knife. It's to protect the knife from the granite! Granite is so hard it can dull knives.

Have you been thinking about ways to increase the value of your home?

Installing stone countertops can help increase resale value. Be sure to crunch the numbers for the most appropriate material selection so that the cost of the materials does not exceed the estimated return.





COUNTERTOPS

THE COMPLETE GUIDE TO KITCHEN COUNTERTOPS

**INCLUDES A SECTION DEVOTED TO
NATURAL STONE**

From selecting to caring for them and more!

Special thanks to

Fred Hueston, Chief Technical Director for Surface Care PROS and author of "*The Buyer's Guide to Selecting Granite Countertops*," and Sharon Koehler, technical writer for Surface Care PROS for their valuable contributions to this article.



SELECTING THE RIGHT MATERIAL FOR YOUR COUNTERTOPS

For people who regularly prepare meals and entertain, countertops are the foundation of a functional kitchen. As such, greater care and consideration is required to select countertops that are both aesthetically pleasing and the most appropriate for their intended use. In this article, we give you details on a plethora of important considerations when it comes to selecting countertops.





Photo courtesy of Artistic Stone Richmond in Richmond, VA.
www.artisticstonerichmond.com

You probably have many questions that need to be answered before you start shopping for your new countertops.

Are you aware of all of your options? What are the advantages of one material over another? How long will it last? What type of care is required? What are some common problems, and how can the appropriate selection help you avoid them? The following pages provide answers to these questions to give you a greater level of comfort and confidence when shopping for your new top.

HOW DO YOU INTEND TO USE YOUR KITCHEN?

Consider how often you intend to use your kitchen and what type of food preparation methods you will employ. For example, people who chop, cut, and prepare most of their own meals might consider selecting a countertop material that is not likely to scratch, such as granite or quartz. If you want the convenience of setting hot pots and pans on your top without causing damage, quartz would be a definite no-no.

COLOR

Think about choosing a color that you will not tire of easily. Neutral colors are better for longevity.





SINK

Do you have your heart set on how you want your sink to look? Some countertop material will not allow the use of certain types of sinks. For example, with many laminate materials, undermount sinks, such as the one in this image, cannot be used.

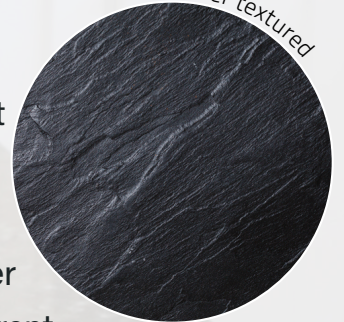
BUDGET

Walls, lighting, cabinets, appliances, flooring, and other features may not be subject to as much wear as your countertops. It may be a good idea to take a close look at your budget and spend less on other surfaces to allow a little more funds for the countertop.

TEXTURE / FINISH

Do you want a surface that is polished smooth? Certain materials are not available in a polished finish. Would you prefer a velvety matte/satin finish? Different surface materials offer their own looks and some have options. For example, with granite, different finishes can be achieved besides the standard high polish—matte, satin, and even a leather finish which is textured with a light sheen and looks like leather. Keep in mind though, that a specialty finish can add to the cost of the project.

Leather textured



COUNTERTOP MATERIALS

There are so many choices for countertop surfaces today. This section presents essential information about most of the materials chosen by homeowners and designers today. Do your homework and be aware of the options. Look at the image galleries offered by fabricators. Check out YouTube, Pinterest, and other places on the web for inspiration and ideas.

And when you are ready, you will want to choose your fabricator carefully. After all, you are going to live with your choice for a long time. You can find quality fabricators at www.surfacecarepros.com.

In the following pages we will explore these surface options:

**CONCRETE • LAMINATE • PORCELAIN SLABS • RECYCLED GLASS
SOLID SURFACE • METAL • WOOD / BUTCHER BLOCK
HIGH END AND EXOTIC • NATURAL STONE**

CONCRETE

When you think of concrete countertops, the natural inclination is to picture a countertop that looks like your sidewalk or driveway. Today's technology makes it possible to have concrete countertops that can look as elegant as any natural stone, and they can be any size, shape, or color that you want. With concrete comes cutting edge design options and special treatment options, such as epoxy coatings, which can look stunning. They can be designed and colored to fit your kitchen décor. They can

be made to look seamless. If you are looking for a truly unique or avant garde look, consider this type of countertop. Because of these many features, concrete countertops have steadily grown in popularity.

Concrete countertops are durable, but certain protective measures are necessary to keep them looking great. Concrete is porous and should be sealed to inhibit staining. Sealers will not prevent staining, only delay

[cont >>](#)

how long a substance can remain on the surface without staining, so it is important to wipe spills immediately. Don't put hot containers directly on your concrete top, because this could damage the sealer, as well as the countertop. Like most countertops, the finish of a concrete top can be scratched. (The concrete will not be damaged, but the seal could be.) Use cutting boards to avoid scratching. You will also want to avoid abrasive cleaners. Concrete tops poured in place sometimes get hairline cracks due to settling or pressure, but most cracks can be repaired. Like many other countertop materials, UV exposure can cause damage. The solution to this problem is having the concrete sealed with an appropriate UV resistant sealer.

Typical kitchen countertop fabricators rarely offer concrete countertops. Look for a specialist with a reputation for excellence, such as DreamCrete Custom Creations in Orlando (www.dreamcretecc.com), to help you envision and realize the possibilities for your concrete countertops.

\$\$\$ \$ **PRICE RANGE** - The cost per square foot runs between \$65 and \$135+.

Image from DreamCrete Custom Creations in Orlando, FL.
www.dreamcretecc.com



LAMINATE

If you would like to have countertops that are attractive, but you have a limited budget, then laminate countertops may be the right choice for you. Laminate is about one fourth the price of natural stone. It is a durable, stain-resistant countertop material that is available in unlimited colors and patterns.

Laminates, often called Formica, are made of plastic glued to particle board or wood. Laminates simulate other materials, such as wood or stone, but a cursory inspection reveals that this material is not the real thing. Some pros of laminate countertops are that they are stain resistant and very easy to keep clean. It doesn't need to be sealed, and it will stand up to heavy impact. The cons are that it is not heat resistant, the edge options for laminate are limited, and its seams are obvious. Like

almost any other type of surface, laminate can become dull or scratched. Although laminate is UV resistant, laminate countertops are not suitable for outdoor kitchens because moisture causes problems with the backing material. The biggest drawback of laminate is that it cannot be restored. Once your laminate has seen better days, it will have to be replaced.

\$\$\$\$\$ **PRICE RANGE** - The cost per square foot runs between \$16.00 and \$28.00.





Photos courtesy of Euro Tile & Stone in Ottawa and Toronto, Canada
www.eurotilestone.com

PORCELAIN SLABS

Porcelain slabs offer a beautiful yet practical countertop selection, especially if you desire the look of marble but want the benefit of very minimal maintenance. Porcelain slabs offer many pros. They are non-porous (therefore stain resistant), scratch resistant, easy to clean, very durable, and won't etch. Available in a limitless selection of colors and patterns, porcelain can be used in almost any design scheme or location, even outdoors. Since it is heat resistant, porcelain will not be harmed by the ultraviolet rays of the sun or by freezing temperatures or frost. Another perk is that porcelain is made from a natural clay, therefore it is eco-friendly and recyclable.

Porcelain has come a long way from its heavy, thick first generation slabs. It is now available in large format slabs that are lightweight and only six to twelve millimeters thick. That means this material is extremely suitable for countertops with waterfall

cont >>

edges or in designs where the countertop material continues onto the backsplash or even entire walls. Porcelain can be installed over an existing countertop in some cases, as long as the structure is sound and edge options are suitable. Your fabricator will be able to determine whether this is a possibility.

Some porcelain slabs have consistent color on the surface and throughout the body. Other porcelain slabs, especially those with a design or patterns that mimic veining in natural stone, have a body color that is not consistent with the surface. Although porcelain is extremely hard and durable, be sure to use a cutting board and avoid damage caused by blunt force of heavy objects. Once porcelain is damaged, it can be very difficult, or sometimes even impossible to repair and restore.

\$\$\$ **PRICE RANGE** - Porcelain slab countertops can range from \$60 to \$100 per square foot.



Photo courtesy of The Stone Brothers in Woodinville, WA
www.thestonebrothers.net

RECYCLED GLASS

Countertops made with glass, often recycled glass, can compliment a wide variety of design schemes, from a funky modern look to a more traditional, terrazzo-like appearance. There are plenty of color choices available, and this material can be made into tiles for backsplashes and walls.

The advantages to recycled glass tops include resistance to heat and UV rays, chipping, cracking, and stains. Regular cleaning is a cinch. With periodic professional cleaning and sealing, and consistent use of a cutting board and hot pads, this countertop material can stay looking fantastic for a long time.

In some cases, the finish of recycled glass tops may be subject to scratches or etch damage from substances that are very acidic or have

strong staining properties. Although recycled glass countertops are more difficult to restore than natural stone, professional honing and polishing can erase signs of use and produce a like-new finish. Most stains can be removed using the poultice method.

\$\$\$ PRICE RANGE - Recycled glass countertops average around \$75 to \$95 per square foot but can go as high as \$150.



Photos courtesy of Countertops of Memphis in TN
www.countertopsofmemphis.com

SOLID SURFACE

Solid surface countertops are uniform in composition throughout the entire surface. This material, made of acrylic and/or polyester plastics, may come with a matte or polished finish, and in some cases, can be more expensive than stone. Solid surfaces do not typically stand up well to heat and are not suitable for exterior use, because their polymers degrade with UV exposure. If you are looking for a seamless, non-porous, stain-resistant, scratch-resistant material that can hold its own with abrasive cleaners and be refinished, consider a solid surface countertop. Edge and color options are plentiful.

\$\$\$ PRICE RANGE - Solid surface countertops average around \$75 to \$120 per square foot.



METAL SURFACE COUNTERTOPS

Architects and designers are reporting a trend toward metal surface countertops. For people who are looking for a sleek alternative to granite and other more commonly used countertop materials, metal countertops are a fantastic option.

There are many pros to selecting metal countertops for your kitchen. Metal countertops can complement other metal kitchen features, such as range hoods, hardware, faucets, and fixtures. With the exception of stainless steel, metal is soft and relatively malleable, which makes many unique custom edge design options possible. In many cases, fabricators can weld and create seamless, custom integral sinks. Almost all metal is nonporous, meaning it will not harbor bacteria from food and drink spills.

cont >>

Brooks Custom offers an amazing selection of countertop options, such as this stunning copper kitchen island and the zinc countertop on the next page.

www.brookscustom.com

Metal cookware has always held historical importance in kitchens, so it makes perfect sense that these same metals eventually found their way to kitchen countertops. Most metal countertops are reactive, or have what is called a “living finish.” New tops can be bright and shiny, but they only stay that way with specialized pretreatments, waxes, and oils. New tops can also be pretreated with chemicals that speed up the patina process, but most people prefer to allow a unique patina to develop naturally over time. Zinc and pewter begin as flat silver or gray but eventually evolve into varied blue-gray tones reminiscent of crushed velvet. Copper, bronze, and brass go from reflective gold and rose gold tones to lustrous greens, iridescent turquoises, and rich, reddish browns.

Metal countertops are relatively easy to maintain. You will want to use cutting boards to avoid knife damage, stains, scratches, dents, and other signs of use and wear. Use trivets to avoid scorch marks. Placing hot

pots and pans directly on a copper countertop will do no harm, though. Be aware that pewter countertops contain lead, and food preparation should not take place directly on the surface. Although metal countertops are suitable for outdoor kitchens, some metals perform better than others against exposure to UV rays and elements. Zinc will eventually oxidize, developing a chalky white appearance.

\$\$\$ PRICE RANGE - Copper countertops average around \$90 to \$200 per square foot, zinc \$130 to \$270, bronze and brass \$130 to \$150, and pewter countertops come in at a hefty \$200 to \$400.



Zinc countertop photo courtesy of Brooks Custom in Mt. Kisco, NY
www.brookscustom.com

STAINLESS STEEL

The clean, professional appearance and durability of stainless steel make it an attractive countertop option for homeowners who prefer modern, retro, or industrial design schemes. This material is also perfect for outdoor kitchens, because it is easy to clean and can hold its own against UV and water exposure. As the name suggests, stainless steel, a nonreactive metal, is extremely stain resistant. Hot pots and pans can be placed directly on stainless steel countertops without causing damage.

There are a few drawbacks to stainless steel. Obviously, the color choices are very limited, as are the finish options, and it can be easily scratched and dented.

\$\$\$\$\$ **PRICE RANGE** - Stainless steel countertops average around \$100 to \$200 per square foot.



WOOD/BUTCHER BLOCK

Wood countertops have a natural, warm appearance. Colors vary from blond to deep brown, depending on the type of wood used. Most wood countertops are made with hardwoods like maple or beech glued together into strips to make butcher block countertops. If you do a lot of cutting, wood may be the perfect countertop choice. Most stains can be removed from wood countertops using DIY methods, and when scratches take over, wood tops can be sanded for a like-new look. Wood tops that are exposed to large amounts of water should be sealed, but keep in mind that even sealed wood countertops can warp. Do not place hot pots and pans directly on wood tops, because they can easily be scorched or discolored by extreme heat. With a UV-resistant coating, wood countertops are appropriate for outdoor kitchens.

\$\$\$ PRICE RANGE - Wood countertops average around \$30 to \$150 per square foot.



Wood options include recycled wood such as this countertop from Maryland Wood Countertops in Arbutus, MD
www.marylandwoodcountertops.com

HIGH END

COUNTERTOPS

Considering something more rare and uniquely beautiful? If paying premium price is not a major consideration, gemstone, exotic stone and other exotic materials, even precious metal, offer one-of-a-kind style for your countertops.

\$\$\$\$\$ PRICE RANGE - Precious metal, gemstone, and exotic countertops are all high-end materials, weighing in between two and five times the cost of more common materials. One can expect to pay anywhere from \$100 to \$1000 or more per square foot, depending on how rare the material is.

Image courtesy of The Stone Collection
www.thestonecollection.com



The pinnacle of luxury when it comes to countertop material is gemstone countertops.



GEMSTONE COUNTERTOPS

Semiprecious stone countertops are crafted by taking slices of very large, vibrant, colorful gemstones, such as agates, jade, jasper, amethyst, and more, and placing them side by side in a resin base. This breathtakingly gorgeous material is surprisingly suitable for kitchen countertops, because it is heat, stain, scratch, and UV resistant, and non-porous, therefore easy to clean.



This semi-precious chocolate brown agate image courtesy of Southeast Stone in Sanford, Florida.
www.southeaststone.net



EXOTIC STONE

Exotic countertops are most often comprised of exotic stone, that is, rare or unique natural stone. For example, regular granite usually comes in earth tones, but exotic granites contain other types of stone that bring vibrant blues, greens, reds, metallic colors, and more. Stone with aesthetically pleasing surprises, such as embedded fossils or crystal formations, is considered exotic.

PRECIOUS METAL

Precious metal, such as gold or silver, is sometimes found as veins and flecks in natural stone. Such stone is thinly sliced, affixed as a veneer on a wood base, and offered as a stunning and truly exquisite countertop material. Precious metal may also become part of a countertop through special manufacturing processes. For example, precious metal can be laminated between thick sheets of crystal clear glass to form a beautiful countertop surface.

PETRIFIED WOOD

Petrified wood is literally wood that has turned to stone, and although rarely used as a countertop material, it is technically considered a semi-precious stone.

OTHER EXOTIC STONE

Other exotic countertop choices include truly unique patterns, colors, even mother of pearl, black pearl shell, and more.

One common misconception is that all exotic countertop materials are difficult to maintain. While qualities such as resistance to heat, stains, scratches, and UV exposure vary, depending on the composition of the countertop material, many exotic countertops are very durable and perfectly suitable for a kitchen environment. Your fabricator can let you know what to expect from your selection.

\$\$\$\$\$ PRICE RANGE - Precious metal, gemstone, and exotic countertops are all high-end materials, weighing in between two and five times the cost of more common materials. One can expect to pay anywhere from \$100 to \$1000 or more per square foot, depending on how rare the material is.



Petrified wood image courtesy of Precision Stone Design in Elk Grove Village, IL. www.precisionstonedesigns.com



Image courtesy of Kiva Stone in Elk Grove Village, IL. www.kivastone.com

YOUR STONE COUNTERTOP GUIDE

Stone Choices | Helpful Stone Selection Tests
Working with Your Fabricator | Edge Choices | Caring for It - Caring for Stone
Troubleshooting | Restoration | How to Hire a Fabricator or Restoration Contractor



STONE CHOICES

There are many types of stone, and when it comes to countertops, each type has its advantages and disadvantages. Here is some essential information you need to know about each of the stone types.




GRANITE

With all the countertop materials out there, is granite still a favorite? You bet! Granite and quartz still reign as the most popular choices for countertops. Granite comes in earth tone colors. Granite with non-standard colors is considered exotic stone, and comes at high-end prices. Although granite is very resistant to damage from scratches, acidic substances, and heat, most granites are porous, and should be sealed to prevent staining. Granite slabs are often treated with resins to make them stronger, and these resins can be UV sensitive. If granite sees a lot of heavy use, it may become chipped or dull and need professional attention.

\$\$\$\$\$ PRICE RANGE - Granite costs from \$45 - \$200 per square foot, but most granite countertops with installation costs included will be in the \$55 - \$75 per square foot range.

Granite has earned the popularity contest and hasn't gone out of style for many reasons. It's not only beautiful, it is not acid sensitive, it's highly scratch resistant, it's heat and UV resistant (unless it has been treated with resins), it is durable and comes in myriad colors.



Marble will develop its own patina after a few years of use. In Europe, people tend to accept and appreciate this patina, whereas in the United States, people lean more toward a perfect looking finish. When choosing marble for your kitchen countertops, if your preference is perfection, be prepared to have your stone treated with etch protection or periodically professionally refinished by a restoration PRO.

MARBLE

Marble is desirable —often a designer's choice, because of its elegance—but unless it is specially treated, it can be an impractical choice for high-use kitchen countertops. All marble countertops will etch when coming into contact with acids, unless they are professionally treated with special protective, anti-etch treatments, such as MORE® AntiEtch. The only exception may be certain green marbles, which can be somewhat acid resistant.

Highly polished marble may not need to be sealed because the pores are closed up, and it likely won't even take a sealer (but test to be sure; see page 35). Sealed or not, marble can stain. Most stains can be removed. Marble is heat resistant, making it a favorite stone for bakers, but it is a soft stone and can easily be scratched. Always use a cutting board.

Most marble is white, gray, beige, or black. Exotic marbles are blue, green, red, orange, and other colors. If the colors in marble are organic, the colors will fade with prolonged UV exposure. Marble develops a patina over time. This patina can remain as a design choice or the stone can be professionally refinished for a like-new look.

\$\$\$\$ **PRICE RANGE** - Marble averages around \$50 to \$150 per square foot installed.

LIMESTONE

Limestone is a beautiful stone found in sandy beiges, browns, and soft blue-greys. Unfortunately, it is also notoriously high maintenance as a kitchen countertop material, because it is very porous, therefore prone to staining, and soft, therefore prone to scratching. If it is used in a kitchen, it absolutely must be sealed. Limestone reacts with acidic substances commonly found in many foods and drinks, and since sealers do not protect against acid damage, anti-etch treatment for limestone countertops would be a wise investment. Although limestone is heat resistant, hot pots and pans should not be placed directly on the stone. If limestone countertops are used in an outdoor kitchen, fading from UV exposure is not a concern. If you choose limestone for your kitchen countertops, contact a professional stone restoration contractor to provide services to maintain its elegant appearance.

\$\$\$\$ PRICE RANGE - Limestone typically costs less than marble or quartz surfaces, averaging around \$55 to \$125 per square foot.



SOAPSTONE

Soapstone offers a unique look with its soft, silky-smooth texture and muted colors — bluish gray, brown, black, white, and green. The stone darkens over time, but the lighter color can be restored with cleaning. Science classrooms often have soapstone worktops because of how well this material holds up to heat. Soapstone is nonporous and does not easily stain. It is both UV and chemical resistant. All of these qualities combine to make soapstone the easiest-to-maintain natural stone option available for kitchen countertops. Homeowners can use sandpaper to remove minor scratches and treat the stone with mineral oil or wax instead of having it professionally sealed. A couple of the drawbacks of soapstone are that it can easily chip under the impact of heavy objects, and it can be more expensive than some other stones. In time, though, the price difference will pay for itself, because soapstone rarely needs professional attention.

\$\$\$\$ **PRICE RANGE** - Soapstone averages \$55 to \$100 per square foot.



Image courtesy of Creative Soapstone in Punta Gorda, FL

SLATE

When it comes to slate, there are a few cons. The color selections for slate are limited to black, grays, and browns. Although slate may have traces of blue, green, or red, it has an overall subdued appearance. Slate is brittle, and more likely to chip or crack than other stones. It also has sharp edges, which should be rounded out for safety reasons. Slate countertops, like almost all other types of stone countertops, are susceptible to etch damage.

Fortunately the pros of slate are numerous. It is durable, hard to scratch, and easy to maintain. Hot pots and pans can be placed directly on slate tops without causing damage. Slate does not fade with UV exposure, making it a very suitable countertop material for outdoor kitchens. Although slate is nonporous, therefore will not stain, it is often sealed for aesthetic reasons, such as providing a shiny or matte finish or enhancing the color. Another perk is that slate is less expensive than other stone.

\$\$\$\$ PRICE RANGE - Slate averages \$50 to \$65 for tile countertops and up to \$100 for slab countertops.





QUARTZ SURFACE (ENGINEERED STONE)

Quartz is an engineered stone composed of mined, ground quartz and a binding material. Since pigments may be added during the manufacturing process, quartz comes in a greater variety of patterns and colors than quartzite, and the countertops you end up with will be exactly like the showroom sample. It has a non-porous surface, which means it is stain resistant and does not need to be sealed. Quartz is prone to heat damage. It is not UV tolerant, but it is an appropriate and popular material for interior use.

\$\$\$ PRICE RANGE - Quartz surfaces average \$30 to \$150 per square foot.

SURFACE BUZZ COUNTERTOP EDITION

Quartz surface offers a vast selection of colors and patterns.

This image of a Silestone Extreme White Zeus quartz is courtesy of Southeast Stone in Sanford, FL
www.southeaststone.net



Blue Moon Quartzite Kitchen Island from The Stone Collection www.thestonecollection.com

Don't confuse quartzite with Quartz Surfaces. Quartzite is a natural stone. It is desirable because it has the look of marble but is harder and more durable.

QUARTZITE

Quartzite is a natural stone, unlike quartz surfaces, which are engineered. If you like marble, you'll love quartzite, because it looks like marble, but it is not as delicate. Quartzite is limited in color choices -- it comes mostly in grays and whites, although it may contain veining and hints of pink or red from iron oxide. Since quartzite is porous, it should be sealed to inhibit staining. Test periodically to ensure it is still adequately sealed. (Refer to the sealing test on page 35.) Quartzite is an excellent kitchen countertop choice because it is not sensitive to acids and UV exposure, and it is heat resistant. Hot pans and dishes can safely be placed directly on the surface. Quartzite is scratch resistant, but cutting boards are still recommended.

\$\$\$\$ PRICE RANGE - Quartzite averages \$60 to \$100 per square foot or more for high-end material.

HELPFUL TESTS FOR STONE SELECTION

Test for stain and etch sensitivity

The Lemon Juice and Oil Test

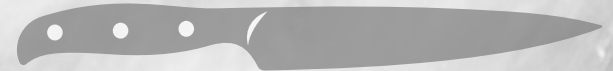
This test, originally created by Maurizio Bertoli, our former technical director and the man responsible for training many of the professional stone restoration contractors out there today, has been updated to reflect changes since his passing in 2008.

It is time to select stone for your kitchen countertops, and you want them to hold up to serious usage without having to be super careful or have them specially treated. What should you look for? Two things: Absorbency and acid sensitivity. You do NOT want a stone that is too absorbent, and you do NOT want a stone that is mixed with calcite (the main component of marble and limestone).

(cont on next page --->)

Test for softness

The Scratch Test

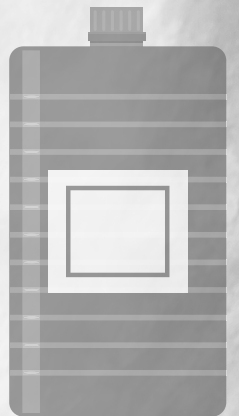


Run a knife lightly across the surface of your sample stone. If the knife scratches the stone, you probably do not want to purchase this stone for your kitchen or expect that you will have to be very careful not to do anything that might scratch the surface.

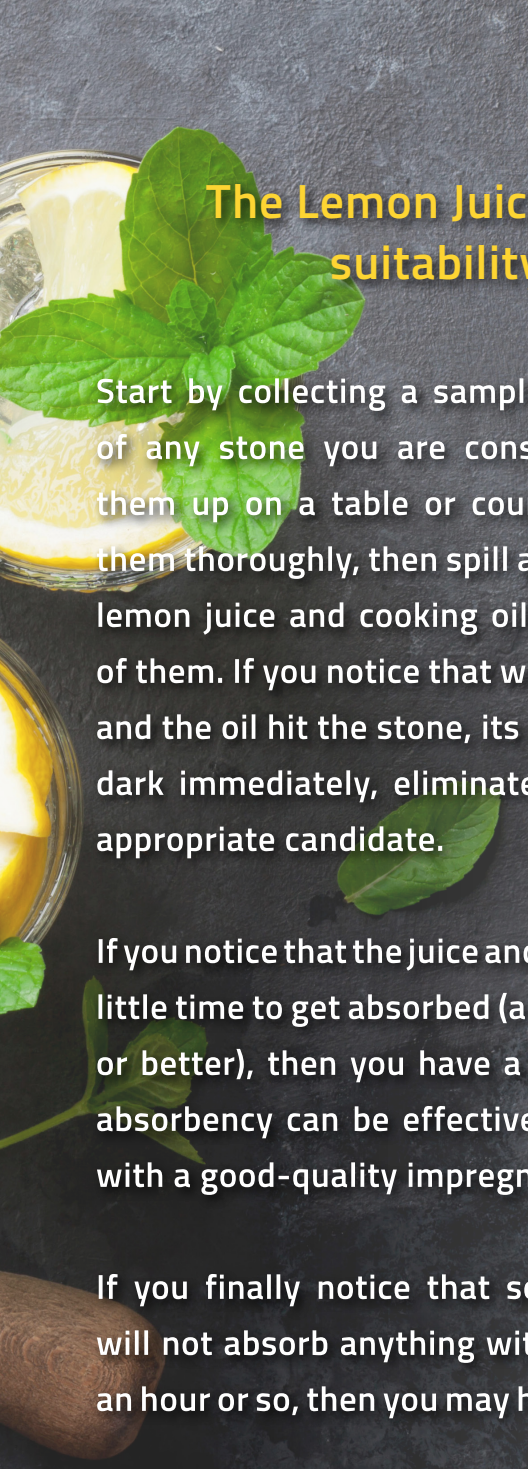
Test for "Doctored Stone"

The Dye Test

Black granite imported from Asia is sometimes actually grey granite treated with dyes and oils to darken the surface. When these dyes and oils are removed, the blackness fades. Unfortunately, the only remedy is to re-polish the top, which can be costly. Before purchasing a black granite top, take a clean white rag and apply some acetone to the surface of the granite. If any residue or black color is observed on the top, do not accept it; it has been dyed.



Most stone suppliers will let you take home a sample to test or play around with to see how it would hold up.



The Lemon Juice and Oil Test will help you determine the suitability of any stone you are considering...

Start by collecting a sample or samples of any stone you are considering. Line them up 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 immediately, eliminate them as an appropriate candidate.

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 in another question: Why use lemon juice instead of, say plain water? You're not just looking to determine the absorbency of the samples. You also want to determine that your samples are 100% silicate rocks. Sometimes a stone may be improperly traded as one type of material when it is actually another. If there's even a little calcite in the stone, the citric acid will cause a chemical reaction, and when you wipe your spills dry, you will notice a dull spot of the same shape of the lemon drops. In such cases, once again, these stones would not be appropriate for a kitchen countertop. If, instead, it's still nice and shiny under where the drops were, then you eliminated the 'may' factor!

But, what if If you have your heart set on a luxurious marble or some other calcium-based stone that does not pass the Lemon Juice and Oil Test?


You have options if you decide to choose a vulnerable surface.

You could, of course, adopt a European mindset by embracing imperfections and appreciating the signs of use and wear as a natural indication that people actually live in the home and love to make use of the kitchen.

However, if maintaining a pristine, virtually perfect polished surface is your objective, either plan on a professional coming in periodically to hone and polish away any damage from acidic substances or have the stone treated with an etch protection treatment such as MORE AntiEtch.

An etch treatment will provide an invisible barrier that will protect your stone from stains and etching for years. These treatments are applied only through trained applicators.

To find stone care specialists in your area, visit www.surfacecarepros.com.



“There are so many things that can drive and affect the price. Square footage is not the only cost factor.”

~ Sharon Koehler,
Artistic Stone Richmond VA
(www.artisticstonerichmond.com)

WORKING WITH YOUR FABRICATOR

FABRICATION

Fabricators are the stone professionals who cut and craft your countertops. They help their customers choose their countertop material, edge types, and design layout. Here is some important info that you should be aware of when working with your fabricator and the fabrication process.

SLAB SELECTION

Your new natural stone countertop will be cut from a slab, that is, a large rectangular piece of stone. Slabs come in basically two thicknesses: .75 and 1.25 inches. Your fabricator can show you samples of finished countertops so that you have an idea of what to expect. If you select the 1.25 inch stone, which is heavier, your fabricator can determine whether your cabinets will need to be reinforced to take the weight. Once you have selected the type of stone you like, then you will need to examine the slab very carefully.

Look for imperfections, such as nicks, pits, etc. Most imperfections can be filled by the fabricator.

RESINED SLABS

Sometimes a stone slab is treated with a polymer-type resin to make it stronger so it will not crack or break while it is being transported from the supplier to the fabricator. It is fairly easy to tell if a slab has been treated. Look at the side of the slab carefully. If you see drips marks on the slab, chances are the slab has been chemically treated.

While this treatment does strengthen the stone, be aware that under conditions with UV exposure the resin can fade, become discolored, and cause spotting. If your installation is exterior—for example, an outdoor kitchen—select a slab that is not treated with resin. You can safely choose to select a resined slab for an interior installation, as long as it is not installed near windows with direct UV exposure.

FEES GO BEYOND SQUARE FOOTAGE

This scenario happens all the time... a homeowner sees an ad for countertops at \$40 per sq ft. The homeowner measures their kitchen and decides they need 50 sq ft. They do the math $\$40/\text{sq ft.} \times 50\text{sq ft.} = \$2,000$. Then they are shocked when estimates start coming in at \$2,500 and up. What happened? Mostly likely they forgot to add the square footage of the backsplash into the equation. Other factors include removal of old tops, sink cutouts, cooktop cutouts, stove bridges, radius corners, brackets for overhangs, or upgrading to a more expensive color. Adding on sinks, plumbing or specialty edges (see next pg) and finishes can also drive up the cost of a project. There are so many things that can drive and affect the price. Square footage is not the only cost factor.

BEFORE THE SLAB IS CUT

Check to make sure the stone is not scratched. If it is, ask your fabricator to repolish it before fabrication begins. If you already have your template made, take the template and place it on the slab. Ask the fabricator

to lay out the template on the slab and mark it. This will give you a very good idea of how each piece of the countertop will look. If there are any unusual natural flaws, the template may be arranged so that these flaws end up in the leftover pieces instead of becoming part of your countertop.

Be sure to discuss seam placement, sinks, cook tops, fixtures, and overhangs with your fabricator before the slab is cut. Any changes to these features could interfere with the template.

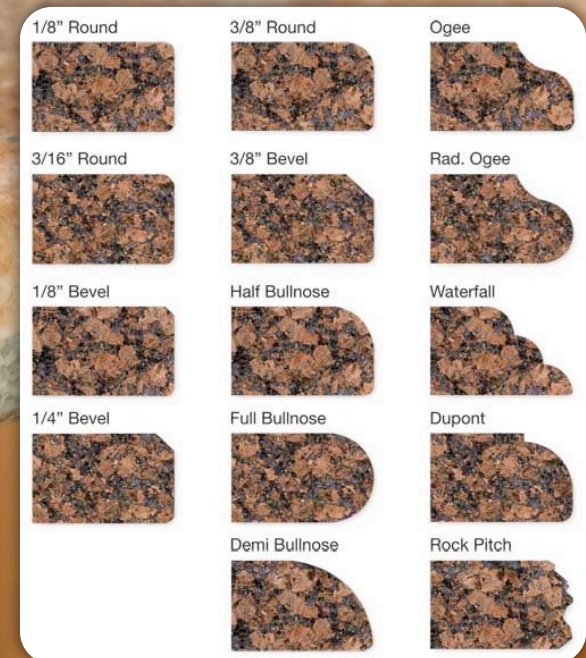


EDGE TYPES

Your fabricator will offer a large assortment of countertop edge options.

Simple edge types are the most popular. Bevel edges add a touch of detail. Avoid sharp edges if you have young children who are at eye-level with the countertop. Rounder edges, such as the multiple bullnose edges, look softer, but since they are rounder, some people have complained that liquid can roll under and sit on their cabinets. Fancier edges like waterfall or triple pencil can look very elegant but are harder to keep clean. Custom laminated edges or combination edges, for example ogee with demi bullnose, can be very expensive. There are dozens of different edges. Not every fabricator offers every edge and not every stone or surface type will take every edge.

Design tip: "The wilder the stone, the simpler the edge should be to not detract from the stone."





KEEPING YOUR STONE COUNTERTOPS

LOOKING
Great!

*With proper care, stone
countertops will look
great for a lifetime.*

Even if little dings and scratches happen, a stone restoration expert can fix these. In fact, unlike many other surface types, stone can often be repaired by a skilled stone restoration contractor with such precision that the repaired area will not be noticeable to anyone who did not know it was once damaged.

101



Caring for stone countertops is really quite simple.

For routine cleaning, always use a stone-safe cleaner. 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 a sealer has been applied. Water and dish soap can leave an unsightly film that will build up and become problematic to remove. For example, wash your hands with

dish soap and then rinse them under running water. Notice how much water it takes to rinse properly. To get the same proper rinsing result 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 counter top regularly with a soft white cloth and an appropriate pH neutral cleaner. Use a higher concentration near cooking and eating areas, and diluted water for less demanding situations such as areas of the counter top far from cooking and eating areas. Ask your stone PRO for specific product recommendations.
- DO** buff the countertop with a clean white terry cloth towel if streaking occurs.
- 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. But, if you do have dried-on spills...
- DON'T** use any green or brown scouring pads for dried-on spills. 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.
- DO** treat your counter tops to a conditioning stone polish occasionally. It 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.
- DO** treat stains. Most stains can be treated with a poultice to break down the stain and draw it out. You can find an interactive stain management app at surphaces.com/stain-management-app
- DO** have your countertops sealed.



Here is a simple test to see if your countertops need to be re-sealed.

Put a few drops of water onto the countertop. Wait a few minutes and wipe off the water. If a dark spots appears where the drops were placed then it is time to have your countertops resealed. The dark spot indicates the water was penetrating into the stone.



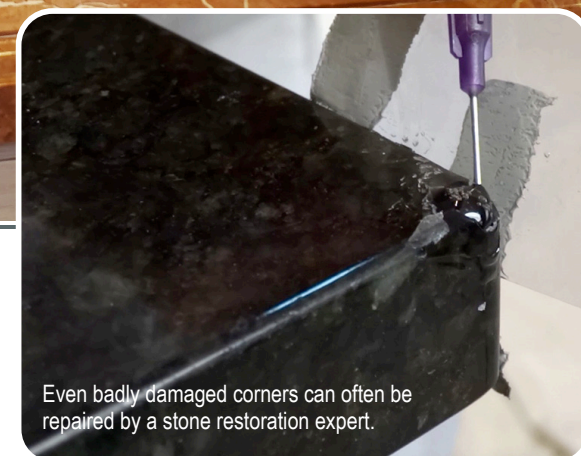
Images showing before and after honing and polishing courtesy of NextGen Surface Care in Houston, TX.

Professional Stone Repair and Restoration

With regular use over the course of time you may notice etch marks, dullness, scratches, chips, cracks, and other damage on your countertops. Your stone restoration professional will be able to expertly resolve a wide variety of problems, restoring the appearance of your countertops to a like new state. Technicians can use tinted epoxy to fill in chips and cracks, then hone the

stone to remove the surface damage, and polish to restore the factory finish.

Restoration and repair of natural stone countertops is a specialized field that goes beyond the scope of regular stone care. Only highly skilled and experienced technicians who are professionally trained and have a thorough understanding of the properties of your specific type of countertops, as well as expertise in the use of specialized equipment and professional cleaning products should be entrusted with



restoration and repair work.

Restoration and repair services can be messy if they are not executed properly. Your SurpHaces PRO Partner stone restoration professional will take extraordinary care to protect surrounding surfaces and use equipment designed to contain dust and spillage.



TROUBLESHOOTING GUIDE

8 POTENTIAL STONE PROBLEMS AND WHAT TO DO ABOUT THEM

Marble, granite, limestone and other decorative stones are durable materials that can last a lifetime. However, if materials are not installed correctly or properly cared for, problems may result in premature wear or replacement. Following are the most common problems and what to do about them:

1. LOSS OF SHINE

The loss of the high polish on certain types of marble and granite can be attributed to wear. This is especially true of marble, since it is much softer than granite. Scraping by abrasive substances can act like sandpaper on the surface. Over time, the polish will wear off. A stone restoration professional can restore the polish using a number of different techniques.

2. ETCHING

When liquids containing acids are spilled on marble, a chemical reaction with the calcium in the stone creates dull, whitish spots known as 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 on polished marble can be removed with a good marble polishing compound. Deep etching or large areas will require the services of a restoration professional.

3. SET IN STAINS

Some stone can become stained if they are not properly sealed. Many foods, drinks, ink, oil and rust can cause stains. Most stains on stone can be removed. For more difficult stains professional techniques by a stone restoration provider may be the only hope. Permanent stains can occur. Visit **SurpHaces.com** to access the **Stain Management App** for professional how-to's for treating virtually any type of stain.

4. PITTING

Small holes in your countertop are called pitting. Pitting is a small crack, indentation or fissure in the natural stone's surface. It can be caused by the polishing process or an inherent, unique mark of the stone. All natural stones have pitting to some extent, though most are barely visible. Most pitting can be filled with epoxy by a stone restoration professional.

5. YELLOWING

Embedded dirt and grime can give stone a yellow, dingy look. Waxes and other coatings can yellow with age and certain stones will naturally yellow with age as a result of oxidation of the iron within the stone. This is especially true of white marbles. If the yellowing is caused by dirt or wax build-up, a professional stone restoration contractor may be able to remove it with an alkaline cleaner or wax stripper. If the yellowing is caused by iron oxidation, it cannot be removed.

6. BAD SEAMS

Seams should be flat, smooth, and inconspicuous. Over time, moisture, earthquakes or the gradual settling of your home can cause slight shifts in countertop levels. In turn, this leads to the shifting of seams, which may crack, break or separate. In other cases bad seams may be because of poor fabrication. The usual solution is for a stone restoration professional to correct the uneven seam by filling it with epoxy or resin.

7. CRACKS, CHIPS, PITS AND BLEMISHES

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.

8. 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 created from hard water minerals such as calcium and magnesium that are left behind when water evaporates. To remove either type of these spots on polished marble, use a marble polishing compound. Moderate to severe etching or larger damaged areas will require honing by a stone restoration professional.



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How to Find a Reputable Stone Fabricator or Restoration Contractor

If you have or are in the market for natural stone countertops, you should have a trusted, go-to professional stone restoration contractor. SurpHaces has taken the guesswork and homework out of finding a reputable contractor. Certified SurpHaces PRO Partners are vetted professionals who have a proven track record of providing excellent service and achieving dramatic results. Visit www.surphaces.com to find out whether one of our PRO Partners serves your area. If not, here are some suggestions on how to find a qualified fabricator or stone restoration company.

1. Check reviews. Today, reviews are a readily available alternative to a personal recommendation.

2. Ask around. Do any of your neighbors, relatives or friends have stone countertops? They may be able to make a recommendation.

3. Call your local Better Business Bureau and ask how many complaints they have



had for a business. Please keep in mind that even the best companies may have a complaint or two, but a large number of complaints is definitely a red flag. On the other hand, if the business is new, there may be no complaints at all.

4. Ask tough questions. Refer to this article as needed to make your own list of questions. Make sure this list includes asking for proof

of proper license and insurance.

5. Compare prices with competitors. Cheaper does not always mean better. If the price seems too low or very high, don't be afraid to ask why.

6. Be prepared to schedule your installation or services weeks or even months ahead of time. Companies who consistently do quality work are in high demand.

7. Is the company a member of a recognized professional or trade organization? Look for members of SurpHaces, The Natural Stone Institute, or The Building Stone Institute.

8. Check whether technicians have specialized training from organizations like The Stone and Tile School, the Natural Stone Institute, or The National Tile Contractors Association.

9. Get a written contract. Make sure expectations are clear. If you do not feel comfortable about any aspect of the contract, do not sign it. Discuss your concerns.

Ask Our PROS



Fred Hueston

aka "Dr. Fred" is regarded as the foremost expert on natural stone and tile. As our Chief Technical Director, he provides a wealth of answers. He also hosts his own radio show and has written over 30 books on stone and tile installations, fabrication and restoration.

Q> Help! The granite around our sink has become discolored, particularly near the soap dispenser where the stone has darkened noticeably. We must not have sealed it properly, because it was perfect when it was installed several years ago. We hate to replace it and don't know if we can afford to restore it. Is there something else we can try first?

A< This is a tough one, though the fact that it's happened near the soap dispenser gives us some clue as to what might be going on. There are two main possibilities. Liquid soap often contains dyes or colorants to give it a more attractive appearance (blue, green, turquoise, etc.), so it's possible the dyes are the source of the discoloration. It's also possible that the discoloration is

caused by a soap made from a high fat source, like coconut oil. Natural "soaps" are saponified fats (natural fats with lye added). Sometimes additional moisturizing properties are also added so that hand soap doesn't dry out the skin. If your soap is derived from natural oils, the darkened area could be the oil acting as an unintended "color-enhancing" or darkening agent.

Try A Poultice

A poultice is an absorbing agent such as talcum powder, diatomaceous earth or even paper towels combined with a solvent like hydrogen peroxide, water, degreaser, etc. that is applied over the discoloration and allowed to sit, drawing out the discoloring agent in the process. It is important to determine what kind of poultice will be most effective with your particular



stain. You can learn more about stains and their removal at [surfaces.com/stain-management-app](https://www.surfacecarepros.com/stain-management-app). It will depend on how deeply the discoloring agent has penetrated. Poulticing can require multiple applications, so if it lightens at all, keep going. Do note, though, that not all stains can be resolved through poulticing.

Call A PRO

If poulticing does not produce the desired results, you have passed the point of DIY and should consult your stone restoration PRO. They may be able to hone the entire countertop and use fine brushes to apply a combination

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Search our Knowledge Base or submit your question

View How-to videos

Read informative articles

Access tools and resources



www.surfacecarepros.com



Ask Our PROS

of color-enhancing and non-enhancing impregnators to mask or diminish the difference between the regular stone and discolored stone.

Q> While we were happy to discover that our three year old is a budding artist, we're less thrilled about the blueberry stains her latest masterpiece left on our natural stone coffee table. We've tried the recommended stone-safe cleaners and several rounds of poultices, but the stains are still there. It's not only a beautiful piece, it's from my grandmother's estate and we'd really like to save it. Is there anything else we can do?

A< This may sound a little weird, but it's time for a trip to the beauty supply store to pick up some 40 volume crème developer – a concentrated form of hydrogen peroxide used in coloring hair. No sideways glances, please, this can actually work very well.

As with any unfamiliar cleaning method, test first. To do this, apply a bit of the developer to a small, inconspicuous area of the stone and leave it on for about an hour to determine whether it will etch or discolor your stone. If the test area looks fine, you can proceed.

Wet the stained area with water, then apply the crème developer using a rubber spatula. Let it sit for 4-8 hours uncovered, checking periodically to gauge whether the stain is removed. You can do this by edging a bit of the developer to one side with the spatula, then re-spreading in if it needs to sit longer. Once the stain is completely gone, use white paper towels and a pH-neutral, stone-safe cleaner to remove the developer and clean the area.

Precautions

Make sure you keep that three year old and any other children or pets well away from the developer – it is caustic to skin and can cause blindness. So, obviously, you also

want to use caution when applying it. Also, please note that this technique is not recommended for rust- or oil-based stains.



kids' page

All About Tiles

These days tiles are made out of a lot of different things—stone, wood, metal, even leather! (But porcelain is one type of tile you will see a lot of, so we thought we'd tell you a little about how porcelain tiles are made.) We've also got a nifty recipe for making tiles of your own from things you can find in your kitchen.

How Tiles are Made

The basic process for making tiles has been around a loooooong time (thousands of years). You shape clay (certain kinds of dirt, mixed with minerals and water) into a flat block and you bake it. Simple, right? Here's the trick, though, most ceramic tiles need to be baked at temperatures higher than your kitchen oven will ever go. (That's why our recipe is a little different than the clay you'll find in pottery class).

MAKING IT

Remember that geometry lesson where you learned that all squares are rectangles, but not all rectangles are squares? Well, porcelain is a type of ceramic, but not all types of ceramic are porcelain. Porcelain, one of the most beautiful ceramics, is a mix of specific types of clay and minerals: kaolin, feldspar, silica and quartz (and sometimes others). Kaolin, also known as China Clay because it was originally only found in China, is the white powder that gives porcelain its translucent look.

European traders took beautiful samples of Chinese porcelain home with them in the 1500s and craftsmen from many European countries did their best to copy them, but they were missing a key ingredient—there wasn't any kaolin in Europe. Well, there was, but it took them 200 more years to find it.

FAKING IT

That's a long time to wait, so in the meantime craftsmen in Europe tried using different things instead of or in combination with kaolin imported from China (this was so expensive, and hard to get, it was called "white gold" and only small amounts of it were used!)

Eventually, a few decent imitations were developed. These were referred to as soft-paste porcelain, because they didn't hold their shape as well before firing (baking) and often melted in the kiln if the temperatures were too high. This also made the finished pieces more fragile, since high heat and longer firing times help give true porcelain its strength.

What's the difference between Porcelain China and Bone China?

Bone china is actually made with the ash of ground up animal bones (yes really!)—one of the 16th Century European attempts to replace kaolin. Once kaolin deposits were discovered in Europe, kaolin was mixed with the bone ash in a recipe that is still used today.

Ever hear of the porcelain throne?

Yep—the toilet. Toilets have been made of porcelain since the 1800s. You might think with all the advances in technology that would have changed by now. But, as they say "if it ain't broke, don't fix it." Porcelain is waterproof and durable, but, best of all, it isn't porous, which means it doesn't absorb things. When you're talking toilets, that means it doesn't absorb bacteria... and... y'know, other stuff, which is fine by me!

MAKING YOUR OWN TILES AT HOME

Since most people don't have access to a professional kiln and your oven won't get as hot as it would have to for genuine porcelain, we're going to imitate those 16th century Europeans and substitute ingredients for what you probably have handy at home.

BASIC MATERIALS YOU WILL NEED

- 2 cups flour (your kaolin)
- 1 cup salt (your feldspar, silica and quartz)
- 1 cup cold water
- 1 tablespoon vegetable or baby oil (because flour isn't really a clay and this will help it act more like one... Oh, and if you're one of those kids that never met an art project they didn't want to taste, use the vegetable oil... trust us on this one)
- Something to stir with (we're partial to wooden spoons—they don't warp when the stirring gets tough)
- A large mixing bowl
- A surface to roll out the dough on, like a large wooden cutting board
- A rolling pin
- A knife (if you're not old enough to handle one of these things yet, make sure the knife comes attached to an adult)
- A cookie sheet
- Aluminum foil



FANCY OPTIONS

Let your imagination soar to make your own unique creations!

Other things you might want on hand

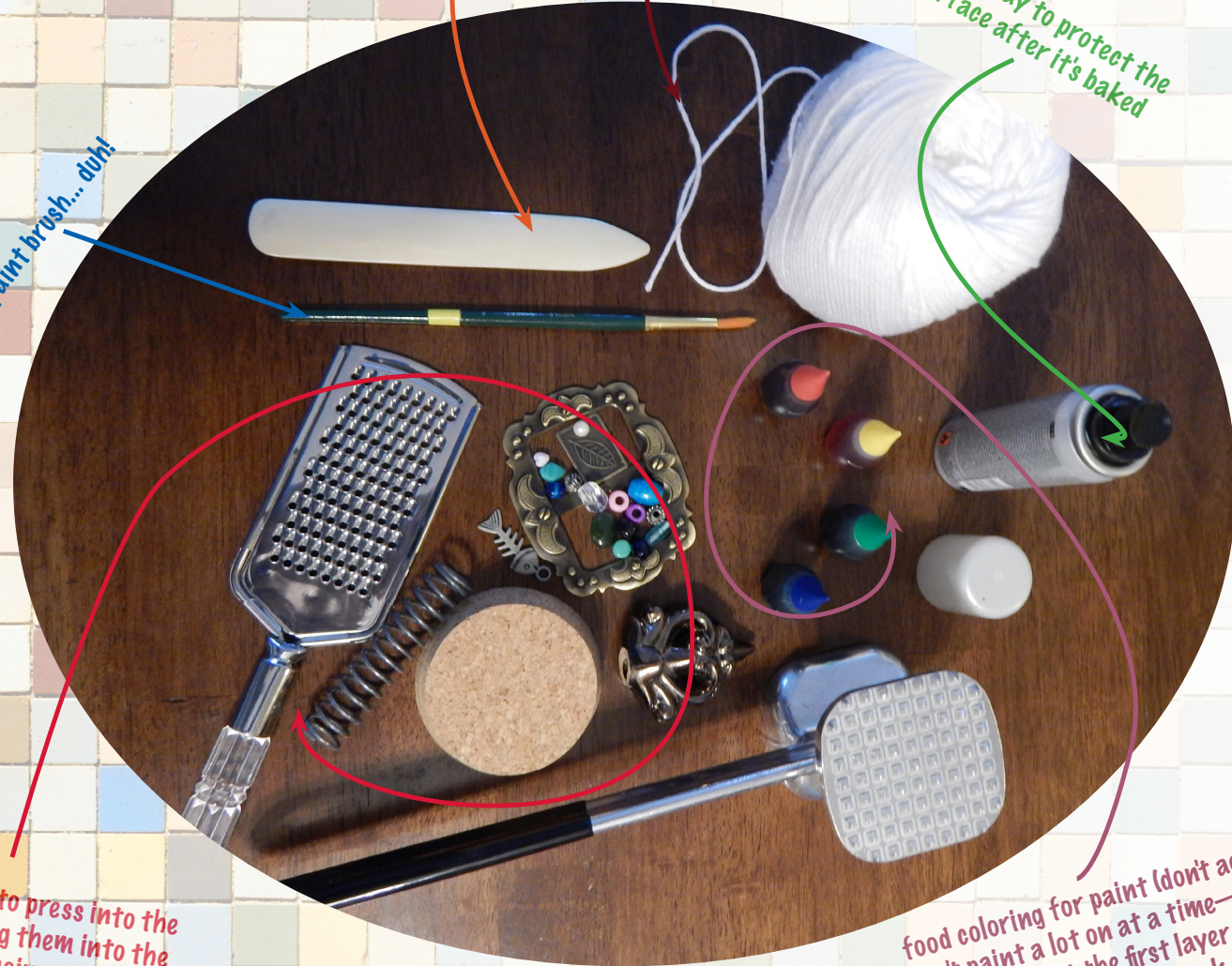
- Food coloring
- A paint brush
- Things you can press into the tile to decorate it or make textures (try our "Making Tiles that Look Like Wood" on the next page)
- A toothpick or other pointed object to make lines or grooves.
- Ribbon or string (for hanging)
- Hairspray or acrylic spray

paint brush... duh!

string for hanging

pointed thing to make lines and grooves with (didn't have any toothpicks—don't be afraid to improvise)

hairspray to protect the surface after it's baked



things to make funky textures or to press into the tile before baking (if you're pressing them into the tile to stay, make sure they aren't going to melt or get set on fire in the oven—glass is good, rocks, too... paper and plastic, not so much!)

food coloring for paint (don't add water and don't paint a lot on at a time—the tile will get soggy—let the first layer dry then go over it again if it's not dark enough.)

If you want to make your tile colorful, you can add food coloring during STEP 3 for a single color tile, or try painting food coloring on the white tile before you bake it, or heck, try both!

SHAPES: You don't have to just make square tiles that are the same size. Many modern tile surfaces combine different sizes of squares and rectangles in their design. In STEP 5, you can also cut your large tile in more than four pieces, and they can be square or rectangular.

TEXTURES: Before you bake, you can create textures on your tiles in several different ways. You can press things into the tile to make impressions—wood, marbles, rubber stamps, get creative (just be sure you get permission if your creativity has led you into someone else's toy chest). You can use a toothpick or something like it to make grooves and lines on part or all of the tile. You can also use the trimmed off edges of your clay to add shapes to the top of your tile (add food coloring to these scraps to add extra pizzazz!) Sometimes these don't stick to the tiles once they've baked, so be ready with some glue. The idea is to have fun.

COLORS: Porcelain is white but often painted with beautiful, colorful designs to make it interesting. Following the directions on the next page, your dough will be white, too, but you might like to add some color. In keeping with the "safe to eat (if not tasty)" theme, we picked food coloring for paint. You

can either mix it in to your dough before rolling it out (this can take A LOT of food coloring and remember putting too many colors in will make brown) or you can roll out and cut your tiles, then paint the food coloring on.

DISPLAY: Poke a hole in your tile before baking so once it's done you can use ribbon or string to proudly hang and display your newly-created tiles.

Make the hole a little bigger than you want it, since the tile may shrink a little when baked, and make sure it's far enough away from the edge that it won't break when tied.



Make Tiles That Look Like Wood!



DIRECTIONS

STEP 1: Preheat oven to 325°F (We know you know this already, but ovens are HOT and you know how parents are about kids and hot things—be sure you get their permission BEFORE you turn the oven on!)

STEP 2: Put the flour and salt in a large bowl and stir 'em up.

STEP 3: Add the oil and cold water to the flour and salt and mix it all together to make a smooth clay that you can roll into a ball that doesn't stick to everything. If your mix is too sticky, add some more flour a little at a time. If it's kind of crumbly and won't stick together, add water a little at a time. If you are adding food coloring to your mixture, this is the time to do it.

STEP 4: Roll out the dough with a rolling pin until it's about 1/4" thick (about the width of a pencil.)

STEP 5: Trim off the edges of the dough to make a square tile. You can now cut this big square tile into four smaller tiles of equal size (or try using some of the "Fancy Options" on the previous page).

STEP 6: Cover your cookie sheet with aluminum foil. Try not to get it wrinkly, so the back of your tile will stay flat.

STEP 7: Carefully place the squares onto

the foil covered cookie sheet.

STEP 8: Put the tiles in the oven and bake until dry, but not burned for about 10 minutes. **note:** If you make different size tiles, the smaller ones will bake faster, so check on them every few minutes to make sure they're not getting brown. You may have to take the smaller ones out before the bigger ones are done. (That's why a lot of people will just make four tiles the same size—they'll probably be finished all at the same time—but we like to get creative and take a walk on the wild side every now and then.)

STEP 9: Remove (or have your parents remove) the cookie sheet from the oven and lightly spray the tiles with hairspray or acrylic spray and let them cool.

Learn a new word

Montmorillonite-Smectite

(mont-mori-ya-night-smek-tight) noun—We think this would make an awesome name for a Harry Potter character, but it's actually a type of clay named for Montmorillon, France, where it is found. Montmorillonite is part of the smectite family (which, like kaolin, is a category of clay minerals.)

