

Tiger Mountain Innovations, LLC

Care and Maintenance Guide for Squak Mountain Stone and Trinity

Version 1.1

CARE AND MAINTENANCE GUIDE FOR SQUAK MOUNTAIN STONE AND TRINITY

1.0 INTRODUCTION

1.1 Thank you! First, I want to thank you for choosing our materials for your home or business. I know that you have many options available to you for your surface and so you have my genuine appreciation that you selected ours. We have been proudly making hand-made countertops and tiles since I started my company in my garage at the foot of Tiger and Squak Mountains in Washington State in 2004.

The following guide has evolved many times over the last several years as we have tested new materials, finishes and process as well as watched some of the original Squak Mountain Stone countertops age in a variety of installations, including my own home.

Our products may seem dormant, but they really aren't. Squak Mountain Stone and Trinity are living materials – changing everyday right along with us. They are not just surfaces that hold up the appliances and “tie the room together.” They are stone tablets that our lives are written and documented on: Sunday morning pancakes, peanut butter and jelly sandwiches for school, birthdays, anniversaries, or special nights with a bottle of wine. Make no mistake – your countertops will reflect your life, whatever it may be.

These products are so easy to live with. Do as much or as little as you like and gratefully live with the consequences. There are more important things to worry about than fussing over your countertops.



1.2 The DISCLAIMER

Squak Mountain Stone™ and Trinity composites, like other stone and cement-based materials, have inherent characteristics that may make it more susceptible to staining, scratching or etching than plastic-resin products; but with proper sealing, care and maintenance by the owner, these can be mitigated. Squak Mountain Stone™ also has a porous nature to it, which may increase the chances for bacterial growth on the surface, if not regularly cleaned and maintained.

This guide is provided to give homeowners and other users suggestions for maintenance, cleaning, stain removal, and minor repair of Squak Mountain Stone surfaces. Because Tiger Mountain Innovations LLC has no control over the experience and ability of users of this guide and their choices as to materials, products and techniques suggested herein, we cannot be held responsible or liable for any results achieved.

We strongly recommend that some scrap from the fabrication, sealing and installation be provided to and retained by the end user to enable the following suggestions to be practiced on the scrap prior to attempting any stain removal or repair of the actual installed surfaces.

2.0 SEALERS AND FINISHES

Your countertop or surface should have been sealed either before or during installation. Ideally, you were involved with the selection of that sealer by working with the Fabricator or the Dealer you purchased your materials through. If the counters were not sealed, please review the following section information on sealers and choosing the right finish for your project.

2.1 Types of Sealers. Long term protection and the type of maintenance required starts with the sealer. Many different types of sealers are being developed every day. As the use of concrete and cement-based materials become more and more common in countertop applications, the technology of sealing will evolve as well. As a result, TMI's recommendations will change as we gain knowledge and test new products as they become available or known to us.

Below is a description of the main sealer choices a Buyer or Specifier has to decide upon:

- **Topical sealers** are coatings designed to protect the surface of stone against water, oil, as well as against abrasions and scratching by applying a thin film of material on the surface. They range from natural wax products to acrylics and other plastic compounds. They can be 1-parts such as acrylics or 2-part, as in urethanes.

Their drawbacks are that they can be easily damaged with a further tradeoff that more durable finishes (such as urethanes) are also difficult or impossible to repair. While acrylics and waxes are a bit more fragile, they are easy to spot repair by a homeowner. Also, film coatings such as acrylics can peel up and remove a bit of the surface, particularly on Squak Mountain Stone.

- **Impregnators (Penetrating Sealers).** Impregnators penetrate below the surface, filling in the microscopic void and becoming a repellent against water and oils. Sealers are considered "breathable," because while they prevent water from coming into the slab, they do allow moisture vapor in the stone pass through. However, water puddled on the surface for a long period of time may still pass into the stone. Some impregnators can also have an "enhancing" effect.

That is, when applied to the stone, they give the stone the same look as when it is wet. This enhanced look is relatively permanent and cannot be undone later.

The main drawback for penetrating sealers is that they do not protect the stone against acid etching, which is a problem for both Squak and Trinity. Therefore, it is recommended that a slab sealed with a penetrating sealer would benefit greatly from the addition of a wear layer of a wax.

2.2 Sealer Choice. The type of sealer that is applied to the stone must be determined by the Buyer or Specifier in conjunction with the Fabricator. It is important to follow all sealer Manufacturer's instructions when applying the sealer.

It is generally recommended to apply a topical finish/sealer to Squak Mountain Stone, such as **AquaMix Seal & Finish Low Sheen or TileLab Matte Sealer and Finish**. If you prefer a more natural, richer finish, **(3) coats of a Tung Oil** may be applied as well, found in the wood finish section of any hardware store.

For Trinity, it is recommended to apply a penetrating sealer, such as **511's Porous Plus** or something similar. A wax finish can be applied as well, such as **Howard's Citrus Shield Natural Paste Wax** or using a stone cleaner with micro-wax to help minimize acid etching.

On Trinity's darker colors, such as "Absolutely" color (black), the use of an enhancer/sealer, such as **AquaMix's Enrich & Seal** will actually provide a better color & uniformity in appearance across the surface.

NOTE: It is important that a countertop should not be used heavily for at least a week after it has been sealed. The chemical reactions involved in creating the barriers in the slabs to

prevent oil and water stains takes several days. While there is a small degree of protection 24-72 hours after application, the sealer may be only 80% cured at the point. Generally our experience at TMI is that most customers who contact us about staining have exposed their countertops too soon to water, acids or other materials and have stained the slabs right away.

Also of importance here is that if a topical acrylic finish is used on Squak Mountain Stone, avoid putting heavy objects, particularly with sticky or rubber feet such as appliances or knife blocks, onto the surface for at least a week after applying the sealer as the feet on the bottoms can actually stick the acrylic as its curing and then pull up sealer as well as stone once the object is moved. Over application or exceptional ambient conditions during application can extend the time required for topical finishes to reach their full hardness.

Beeswax on Countertops – Beeswax can be used as a finish on Squak and Trinity, however, due to its softer nature and moderate water solubility, it is more likely to suffer from water-spotting, rings and damage from acidic materials. It is recommended to look for wax products that contain carnauba wax, a vegetable wax that is much harder. The Howard's product mentioned above is one example.

2.8 The Finish. The finish, visual and tactile, is a key element in the appearance of Squak and Trinity. What is supplied from TMI is not the only finish that is possible on both products so a customer who desires something a little different will need to work with the Fabricator to alter the factory-finish on the materials.

2.3 Factory Finish. Squak Mountain Stone's "natural" finish, visually, is a dull sheen. From a tactile perspective, there is generally a smooth feel and touch to the material. However, there are some areas that are rougher, due to the

nature of the product and the hand-finishing process. These rougher areas are not defects.

Trinity, on the other hand, is mechanically polished on a state-of-the-art line polishing system. It has a glossy, smooth feel across the surface. In some areas, pitting or fine pinholes may be felt but should not be reflective of the vast majority of the stone surface.

2.4 Alternative Finishes. Generally, for Squak customers, the preferred finish is a matte/low sheen finish, supplied by a topical sealer or wax. However, using a high-gloss sealer is also appropriate. The Buyer or Specifier should work directly with the Fabricator to achieve this.

Alternatively, if a customer wants to have a honed finish on Trinity, it is possible for the Fabricator to "knock down" the shine by polishing the surface with 200 or 400 grit diamond polishing tools. This will provide a smooth feel with a dull sheen.

3.0 CLEANING & UPKEEP

3.1 Normal Maintenance for Counter or Table Tops. Always use coasters under all glasses, particularly those containing alcohol or citrus juices. Many common foods, drinks, and cosmetics contain acids that will etch or dull the surface of many stones. Use trivets or mats under hot dishes and place mats under china, ceramics, silver, or other objects that can scratch the surface. Blot up spills with a paper towel or cloth as soon as possible.

3.2 Lavatory Tops. As a rule, lavatory tops in residential bathrooms receive little abuse other than pollutants that might be contained in cosmetics. However, many women's anti-aging beauty products actually do contain weak acids and should be wiped up immediately if spilled as they can leave an etch on the surface of TMI products. Also, soaps may contain oils and if left for long periods of time, can leave staining or oily

residues, especially in public restrooms where soapy water may be left on the counters for longer periods of time. Finally, fingernail polish remover (acetone) will strip up any topical acrylic finishes on Squak Mountain Stone and should be used with caution.

3.3 Cleaning Products. Clean regularly with a neutral cleaner that does not contain solvents. It is recommended to use a cleaner specially formulated for stone that also contain sealer, to help provide a layer of protection to the stone surface during each cleaning. These products can be found at most home improvement or tile supply stores, such as **TileLab's OneStep Cleaner & Resealer** or **Simple Green Stone Cleaner and Stone Polish** products.

NEVER use any acidic cleaner or chemical, such as homemade vinegar cleaning solutions, on Squak Mountain Stone or Trinity, as these will likely etch or dull the surface.

3.4 Exterior Surfaces. Maintenance and upkeep from Squak Mountain Stone and Trinity used in exterior applications is generally the same as interior. However, normal maintenance should include also periodic inspection of stone surfaces for structural defects, movement, deterioration, or staining.

3.5 Wet Areas. The most important outcome in the maintenance of Squak and Trinity in wet areas is the prevention of mold and mildew, which can lead to damage of the stone as well as the surrounding materials. The following are best practices for wet areas:

- Always use mechanical ventilation in showers and bathrooms to vent out the moist air.
- Remove surface mildew by scrubbing the area with a neutral soap. Rinse thoroughly, and buff stone dry.

- Repair leaks and grout damage promptly to prevent seepage. Mold cannot grow without moisture.
- Reseal the stone promptly once its apparent the sealer has worn down.



Figure 1: It is time to re-seal when the counter darkens in areas after being wiped down with a wet sponge.

4.0 COMMON REPAIRS AND FIXES

4.2 Chips. Edges can chip. So be careful with pots and pans. Consider “easing” any edges in high traffic areas by rounding them over with sandpaper. This will help deflect any direct shots.

If you do chip an edge you can do one of two things:

If you have the chipped piece, it can be glued back to the surface with any multipurpose glue. Or you can remove the chip and sand it with a 100 grit sand paper, to smooth it out and blend it in as much as you desire with the rest of the surface. Then reseal the exposed area with sealer.

Resist, if you can, the temptation to try to “rebuild” the chipped out area with grout or epoxy. 10 times out of 10 it ends up looking like you tried to repair it, which makes it more

noticeable than it might have been if it was simply sanded to blend in and re-sealed.



Figure 2: This “chip” was caused by repeatedly smacking the edge of the counter with a hammer. This is a good example for why we don’t recommend you hammer on your countertop.



Figure 3: This same area is softened up by hand sanding it with 100 grit sandpaper. It should be re-sealed (not shown), to protect it and help it match the rest of the countertop.

4.5 Pits and Pinholes. An issue that is dominating with cementitious precast materials is the emergence of pinholes in the surface. These surface holes are very much like the pitting common in granites. The pinholes, when found in the shop during finishing, are filled in with a color-matched slurry. However, shipping and use of the countertop can reveal more pinholes. These pinholes do not affect the durability of the countertop and do not qualify as a “defective” material.

If you find the pinholes to be objectionable, they can be filled with a color-matched soft wax filler.

Contact TMI for information on how to obtain the wax filler.

2.6 Scratches. Because Squak Mountain Stone and Trinity both have similar characteristics to marble and travertine, they are susceptible to scratching. Squak can be scratched more easily than Trinity. However, if sand, sharp glass or glazed ceramic rubs across the Trinity surface, it can leave a deep, permanent whitish mark on the face.

In many cases, the scratches can be sanded or polished out to make the scratch unnoticeable. With Squak, sanding out a scratch requires a 150 grit sanding sponge or cloth (not sandpaper, this can be too rough or gritty), and using light to normal hand pressure, the sanding sponge should be moved around in a tight circular motion, so that the entire area is blended in with the surrounding area. Never sand straight down the length of scratch as this will leave a light, wide line along the path of the scratch and make it more noticeable. Just as with pinholes, a scratch on the Squak surface will actually blend quite nicely with the rest of the surface and probably can be left alone.

A non-sanding method to repair scratches is to use a soft-wax or crayon to color into the scratch.

For Trinity, light scratches (those that can’t be felt with the hand) may be hidden with a dab of oil rubbed into the scratch. However, for deep scratches, particularly those from sand, that have left the glass frosted and chipped away, scratches can only be repaired with a resin filler and mechanical polishing.

2.6 Cracks. There are two major types of cracks found in Squak Mountain Stone and Trinity. The first is “thermal cracks” or crazing. These occur during the curing process when the material has gotten too hot or dried out too quickly.

The second kind of cracking occurs during handling, fabrication, transport, or installation.

Although not as likely, a third condition can lead to cracking after installation. If the stone was not properly installed with a sufficient base of material underneath to support it the slab or if the stone is subjected to an unusual amount of force, as in the case of a non-typical use for the stone (say, putting a full car engine on the kitchen island to do some repair on it), the stone may crack.

In Trinity and other natural stones, cracks are repaired by injection of a penetrating resin adhesive, which may be dyed to match the stone, and then rebuffering the area after curing of the resin. It is possible that the entire slab must be re-polished to make the repair unnoticeable. For Squak, a similar method or a color-matched grout filler can be used to repair as well.

Repairing large cracks should be performed by a professional fabricator, as they will likely have the necessary experience and tools.

5.0 STAIN & BLEMISH REMOVAL

5.1 Surface stains can often be removed by cleaning with an appropriate cleaning product or by gentle sanding. The methods for removing stains depend a great deal on the type of stain. The following is a list of typical stains and methods for removing them. It should be clear, however, that some processes may need to be repeated more than once and that there is a possibility that the stain will be permanent.

5.2 Oil-based stains Oil-based stains derive from cooking oils, home-made soaps and even cosmetics. Oils leave behind dark spots, and like on dishes, oils must be broken down with a detergent first so that water can rinse it away. First, remove the source of the stain by wiping. Next, lay a folded paper towel or rag over the stain and partially saturate it with a detergent,

such as liquid dish soap, ammonia, mineral spirits or acetone, and gently rub over the stain to pull it out and draw it into the towel. Do not pour the cleaner directly on the stain – this can result in thinning the stain and spreading it out even more. For tough stains, commercially available specialty cleaners, such as degreasers or poultices may also be used.

5.3 Organic/Water-based stains. These stains are from coffee, tea, fruit and other non-greasy foods. If the stain appears on slabs outdoors, typically the effects from the sun and rain will eventually bleach out the stains. Indoors, clean with 12% hydrogen peroxide and a few drops of ammonia or a 10% solution of bleach. Commercially marketed cleaners and poultices are also available.

5.4 Rust stains. Rust stains must be removed with a poultice. Deep-seated, rusty stains are extremely difficult to remove, and the stone may be permanently stained.

5.5 Ink Stains. Clean light-colored materials with bleach or hydrogen peroxide. Use acetone for dark-colored materials. Similar to removing oil-based stains, do not pour the cleaner directly on the stain to prevent it from spreading. Place a folded paper towel or rag over the stain and partially saturate with the cleaner and attempt to draw the stain into the towel.

5.6 Paint Stains. Small amounts of paint can be gently scraped off with a razor blade. If there is a lot of paint on the stone, removal may require the use of a commercial paint stripper. If it's an acrylic or latex paint, acetone may be used.

5.7 Water spots and rings. These are light colored areas that develop due to the accumulation of hard water on the stone surface. To remove these, try buffing the stone with dry #0000 steel wool.

CAUTION: Dust or wire remnants from steel wool must be thoroughly removed before any

water-based finish or other moisture source is applied to the surface to avoid possible rust stains. A way to avoid this problem is to use BRONZE wool or products like Scotchbrite™ instead. Bronze wool is usually available from specialty wood-working supply stores.

5.8 Etch Marks. Etching is caused by an acid being left on the stone surface, such as citrus fruit, vinegar, wines, etc. An etch is a roughened area where the acid in the material has formed a chemical reaction with the more alkaline Squak Mountain Stone or Trinity surface. Sometimes a stain is left with the etch, as in the case of a wine stain or hot sauce stain. With vinegar, the etch will appear lighter than the surrounding stone.

With Squak Mountain Stone, etches can be easily sanded out and the lighter area simply blended so that it looks less precise and more like a naturally lighter part of the stone already there. With Trinity, the etches are more obvious and slightly more difficult to remove. An etch may be able to be buffed out using a buffing cloth or polisher with a Marble Polish, available from a tile or stone supply store.

5.9 Sticky Stuff and Tape. Never pull off something that is stuck to the surface. Always try to soften it with warm, soapy water. Once softened, use a soft sponge to wipe clean. If it does not soften or clean up with warm, soapy water, then use a razor blade/handy blade to gently scrape the glue from the surface. This will remove some of the sealer but will reduce damaging the surface.

If something has stuck to the surface of the stone and pulled up material or sealer (see photo below), the area will require some repair work.



Figure 4: The popsicle stick was stuck onto the slab with white glue and allowed to dry. Then the stick was pulled straight off, showing the damage.

See Section 7.0 for an example of repairing stains and other types of surface damage or blemishes.

MASKING TAPE WARNING!

Masking tapes are used quite often in installation to protect surfaces and to hold down other protective materials but it has been found that certain types of masking tape can actually pull up topical finishes on Squak Mountain Stone. Avoid using tape on a newly sealed surface if at all possible, even the quick or easy release tapes.

If masking tape has been used and some damage is noted (a tape print left on the surface, area darkens when wiped with a wet towel or sponge, like in Figure 1), refer to the repair example at the end of this Guide.

6.0 POULTICES

6.1 What is a Poultice? If a stain cannot be removed with the cleaning suggestions in section 5.0 of this Guide, then a poultice maybe a necessary next step. A poultice is a combination of an absorbent “base” material with a chemical that is used to remove stains from stones. Typically, the absorbent material is powder and the chemical is a detergent or other agent. The combination of the two creates a “sponge” of sorts – the chemical breaks down and dissolves the stain and the powder draws the stain from the face of the stone as it slowly dries out. A poultice will typically take about 24-48 hours to work and in some cases, may have to be repeated several times in order to fully remove a stain.

6.2 Materials. The base for a poultice can be many forms but TMI has heard success with simple baking soda, flour, or talc powder. You also use a white paper towel or white cotton balls as a base. Do not use colored towels or cotton balls or you may accidentally stain the counter from the ink on the towels. To determine how much powdered base you will need, consider that approximately one pound of base material will cover one square foot.

The chemical agent needed to dissolve the stain depends on the type of stain. Use the following table to determine which agent is appropriate with any of the previously mentioned base materials. If the thought of a home-made poultice seems daunting, a pre-mixed poultice can be purchased from a tile or hardware supply store.

Type of Stain	Chemical Agent
Oil-Based	Water with a little dish soap
Organic	12% Hydrogen Peroxide solution or Acetone
Rust*	Rust Remover (CAUTION: some contain acids that will etch Trinity or Squak.)
Oxidation*	Ammonia
Paint	Paint Remover
Ink	Mineral Spirits or 10% Bleach solution
Biological	Bleach or Hydrogen Peroxide

**These stains are more difficult to remove and may require a professional to assist.*

6.3 How to Apply the Poultice. When deciding to use a poultice to remove a stain, remember that it may have to be applied multiple times. Also, some different combinations may be tried to find the most effective combination.

1. If using a powdered poultice material, mix with the cleaning agent or chemical to a paste with a creamy "peanut butter" consistency. If using a paper towel or cotton ball, first soak the paper towel in the cleaning agent and then let the excess drain off. You don't want the towel or cotton ball so wet that the liquid drips off of it.
2. Wet the area of the stone with distilled water. If there is a topical sealer or wax on the surface, it would be beneficial to remove it first. For a topical finish on Squak, light sanding until the dust has the color of the stone in it. For Trinity, using a stripper, like acetone, is preferred.
3. Using a wood or plastic scraper, apply the poultice to the stained area. Evenly spread it around and leave it about ¼" to ½" thick, making sure to extend the poultice beyond the stained area by about 1". Do not use a metal scraper or knife or you could accidentally scratch the stone surface.
4. Using plastic wrap, cover the poultice and gently tape (see above Warning) down the edges, to keep the poultice from drying out too quickly. However, small holes should be punched into the plastic, using a pin or toothpick, to allow some vapor to escape.
5. After 24 hours, the plastic cover can be removed and the poultice left on for an additional 24 hours. The poultice needs about 24 to 48 hours to dry out and draw the stain out from the stone and into the poultice.
6. Clean the poultice off the stain by brushing or wiping it up with a dry cloth

or paper towel. Then rinse the treated area with distilled water and buff dry with a cloth.

7. If there still appears to be a stain, then repeat the poultice application. It may take several applications for difficult stains.
8. If the treated area appears dark, it may be that there is some residual moisture leftover from the poultice. Allow the area to dry completely before applying a new topical finish or sealer.

7.0 SQUAK STAIN REMOVAL EXAMPLE

7.1 Real Life Example. This Squak slab was used in a store as a demonstration piece. It was finished with (3) light coats of a water-based acrylic sealer. It was neglected and subject to abuse from the sales staff so that the “aging” process could be accelerated. The slab was then returned to us to be studied and restored. The following is a quick and easy process used to reduce the appearance of the stains (and scratches) on the counter. Oil stains may not be completely or even partially removed doing this, because they are usually much deeper.

Before the stain removal process, the entire slab was scrubbed down with a steel wool pots & pans cleaning pad (impregnated with a baking soda based cleaner). This was done in order to make sure the rings were *really* stains. Figure 5 shows the rings that were still left on the counter after this thorough scrubbing.



Figure 5: Slab after initial cleaning

7.2 Step 1. Using light to normal hand pressure, sand the stain and a bit of the surrounding area, in a **gentle** circular motion. Keep sanding the area until you just start to see a bit of the color of the slab in the dust. This means you’ve removed the old sealer and a small layer of the countertop, where the stain is. If you still see some of the stain, repeat. Resist sanding the stone itself too much or you will get a lighter patch and possible rough texture where the old stain was.



Figure 6: Two areas of the slab have been lightly sanded until colored stone dust starts to appear.

7.3 Step 3. Wipe up the dust with a tack cloth or a damp paper towel. If you’ve used a damp paper towel, let the slab dry out for an hour. Once it is clean and dry, wipe on a light coat of a topical sealer or wax.

7.4 Final Result After the sealer cured, most of the stains are completely gone and the ones that remained have been reduced. You can leave it as is or apply your favorite countertop wax finish.



Figure 7: Before sealing, all of the stains have been sanded away, as seen by the lighter areas.



Figure 8: After sealing, the lighter, sanded areas are again the same color as the rest of the sealed slab and the appearance of the stain rings is vastly reduced.

As compared to using a poultice (which can take up to 48 hours of wicking and another day or two of drying out the moisture in the slab) this method is easier, faster and just as effective.

Use this process for also removing scratches or fixing the acrylic sealer when it's been damaged by acidic materials or tape.