

TRIPLE-S CONCRETE (ACID) STAINS Comprehensive Technical Review

SYNOPSIS:

***Triple-S Concrete Acid Stains* are reactive solutions designed to create beautiful colors on new and/or old concrete that will not chip, fade, crack or peel.**

Concrete acid staining solutions contain inorganic metallic salts that when dissolved in water, react with the minerals in concrete to create a beautiful variety of colors. Concrete acid stains are not paints; they are a combination of metallic salts which are dissolved in an acidic, water-based solution that react with the hydrated lime (calcium hydroxide) found in concrete. The acid in the solutions open up the pores of the concrete while the metallic salts penetrate to form a durable and permanent color. The user must understand that this is a chemical process and exercise appropriate safety precautions as described in the **Caution** sections below.

Created to color new and/or old concrete alike, Triple-S Chemical Products offers a variety of stain colors from which to choose. However, because they react with the hydrated lime (calcium hydroxide) found within concrete, every stained floor will be different. Most concrete surfaces contain these minerals that are essential to the staining process but every floor will have different concentrations. Every stained floor will be unique in its appearance; even certain parts of a particular concrete floor will have a higher concentration of lime than other parts and therefore, these areas may have brighter and more vibrant coloration. The mottled and varied appearance of acid stained floors is common and one of the main reasons the process has so much appeal.

Concrete acid stains are very durable and the colors they yield are longer lasting than acrylic paints or other types of concrete coatings. Concrete acid stains penetrate the surface of the concrete and react with the top layer of the aggregate, 1/16th to 1/32nd of an inch. They will not chip, fade, peel, scratch or wear off as most paints, acrylic stains or water based stains will do in time. As a result of this penetrating process, the only way to remove acid stain effectively is to grind or sand blast the top layer of the concrete surface. **This is a permanent process.**

Additionally, it should be noted that *Triple-S Concrete Acid Stains* will not cover blemishes in the concrete. These are not paints and therefore, any blemish in the concrete that was visible prior to staining will still be visible afterward. Additionally, when the floor is sealed, these blemishes will be magnified. Therefore, prior to staining, attempt to repair or remove as best as possible any major blemishes such as holes, craters and/or stains.

USAGE:

Triple-S Concrete Acid Stains have been used to decorate outdoor walkways, basements, game rooms, living rooms and bedrooms, kitchen counter-tops, patios, fountains, restaurants, retail stores and store fronts, decorative statues and tables, backyards, garages and even portions of highway dividers. The uses are limitless.

Triple-S Concrete Acid Stains are sold ready to use. However they can be diluted with water if the resulting color is too intense for the user's taste. Due to the nature of concrete acid stains, too much water will neutralize the effects of the solution and therefore no more than a 10% dilution is recommended.

Triple-S Concrete Acid Stains have a shelf life of 1 year from date of purchase and are available in 8 ounces, 16 ounces, 32 ounces, 1 gallon bottles or 5 gallon pails. For shipping purposes, four 1 gallon bottles or one 5 gallon pail can fit per box. The same applies to **WSL-45** and **AL-70** (sealers) however, only 4 gallons of **UT-70/30** can fit per box and only 2 gallons per box of **UT-9500**.

DYE BASED STAINS:

Triple-S offers over a wide variety of colors of concrete acid stains which may be viewed on our concrete acid stain [color chart](#). Most of our colors can be used indoors and/or outdoors.

However, there are five colors which are dye based and therefore, if applied outdoors, they will fade due to Ultra-Violet light. These colors are: **Burgundy, Brick, Sea Blue and Yellow**. For these colors, the concern is color fading when exposed to constant sunlight. In our tests, using a UV resistant polyurethane sealer has retarded, but not completely stopped, the fading of these colors. Nonetheless, we deem these five colors as UV unstable and recommend them for indoor use only.

Additionally, as these five colors are not acid stains but more like dyes and they will not give you the typical, mottled and varied reaction of a concrete acid stain. Their reactions will be more uniform and look more like a paint but unlike a paint, they will penetrate the concrete surface. Because these six colors are dyes, they may react adversely with the true acid stains. We therefore, do not suggest mixing these colors with the true acid stains because of compatibility issues. We also do not recommend diluting the dye based stains.

Additionally, these colors are not considered corrosive liquids nor do they contain corrosive chemicals and therefore their shipping will not incur hazardous charges. Additionally, these stains do not need to go through the neutralization process and you can seal them once they are completely dry.

COVERAGE:

Coverage is dependant on several factors. *Triple-S Concrete Acid Stains* will yield approximately 200-250 square feet per gallon. However, there are several circumstances that can greatly affect this approximation: porosity of the surface, the age of the concrete, the composition of the concrete and the weather at the time of application. However, 1 gallon of stain should not be spread more than 250 square feet.

The porosity affects the coverage area because a flatter, smoother surface will absorb less stain than a very porous surface. A rough finish or a broom finish, that has been minimally trowelled, similar to a city sidewalk, will absorb a lot of stain and therefore a gallon may barely cover 200 square feet. On the other hand, a smooth and hard trowelled finish, that might be found in a home, may not absorb as much concrete stain and therefore, less than a gallon may be needed to cover a 200 square foot area.

The age of the concrete is important because normal wear and erosion may leave the surface devoid of the necessary minerals needed to react with a concrete acid stain. This is even more probable with an outdoor surface that has been exposed to the elements. Therefore, older or weathered concrete surfaces may not always yield a reaction and the color may fail to develop. If the surface is weathered that the reaction is minimal or almost non-existent, that specific surface may not be suitable for concrete acid staining. We recommend to always test a small area to evaluate the color and the reaction prior to full use. See ***Preparation*** section below.

The composition of the concrete is important because as mentioned before, certain concrete surfaces may have more or less of the necessary lime for acid staining. Some concrete slabs simply do not accept concrete acid stain very well and the color may never fully develop. Sometimes, there may be something in/on the concrete that does not allow the stain to penetrate such as a curing agent. In all cases, we strongly recommend testing a small area prior to full project use!

Lastly, the weather can be an important factor because concrete expands with heat. Therefore, more concrete pores will be exposed on warm days and resultantly more concrete acid stain will be absorbed than if applied on a cooler day. Additionally, the stain may dry too quickly if under direct sunlight or if it's applied to a hot concrete surface and fail to penetrate and yield the desired effect. On hot days, you can attempt to cool down concrete by wetting it lightly with water and once it dries, apply the stain. However,

it is best to apply the stain early in the morning or later in the afternoon when the sun is not at its strongest intensity. Apply when temperatures are between 55° F and 85° F.

If the stain color is too dark, water dilution is possible. No more than a 10% dilution is recommended. If one gallon of stain is diluted 10% with water, the square footage yielded will also increase by 10%.

EQUIPMENT:

We recommend using safety gear with the use of all of our products. Please wear the appropriate safety gear at all times including safety goggles, rubber gloves, boots and protective clothing. *Triple-S Concrete Acid Stains* contain harmful chemicals such as hydrochloric acid and iron chloride; avoid breathing in their vapors and mist. Avoid contact with skin, eyes and clothing. Wear P100/Hydrogen Chloride respirators.

Cleaning process:

- Mop
- Acid resistant wet-vac
- Mild detergent
- Broom
- Inert material or saw dust
- Plenty of fresh water

Cleaning before application requires the above mentioned items. An acid-resistant wet-vac can facilitate the preparation and clean up process as well. If a wet-vac is not available to you towels, sawdust, inert material or old rags can also be used to soak up the excess water. If the surface has a coating or has been previously stained, a grinding and/or sandblasting machine may be necessary.

Application:

- Paint brushes or rollers
- Sponges
- Acid resistant plastic brush
- Hand pump sprayer
- Acid resistant bucket

Do not use brushes that have colored bristles as the acid may cause the color to run. Triple- S recommends using hand pump sprayers that can be bought at most hardware stores; they are the same sprayers generally used to spray insecticides on plants and known as Hudson sprayers. They MUST be completely plastic because the acid in the solution will corrode any metal parts. Rollers can be used for the sealers and should have a solvent resistant core and should have a 3/8" nap. *Triple-S Chemical Products, Inc.* carries a heavy duty, all plastic acid staining sprayer as well as the appropriate rollers for sealer application; please inquire when placing your order.

PREPARATION:

Proper preparation of the concrete is of paramount importance and the end result is very dependent on this process. It is however, a fairly simple process for new and old concrete alike. After a test area has been stained and approved, then staining of the larger area may commence.

First, the surrounding areas such as walls and shrubbery should be partitioned. Partition the to-be-stained areas from outside interference such as pedestrians, cars or animals. Tape the walls where they meet the ground. It may be necessary to place plastic sheets on the wall as well (about 4 feet up the wall)- this will protect the walls from a spray application. Concrete acid stains contain chemicals that may cause harm to

greenery and shrubbery; do not allow the solution to come in contact with plant life or animals. Also, turn off any automatic sprinklers, any fountains, remove hoses, etc. that may potentially wet the surface during the staining process.

Secondly, if the concrete is newly poured, it must cure for 3-4 weeks to properly accept the *Triple-S Concrete Acid Stain* at the proper intensity. It is highly recommended to wait one month for full, natural curing; no curing agents should be used.

Thirdly, both new and old concrete must be thoroughly cleaned prior to staining. They must be cleaned free of oil, sealers, waxes, grease, water repellants, dust, paint, etc. Natural debris such as dust and dirt can be removed with warm water and a mild detergent (such as Ajax). A wet-vac may be useful for indoor cleaning; a mop and bucket or a hose and broom may suffice for outdoor cleaning. Make sure the cleaning process is thorough and all cleaning agents have been removed; afterwards, it is recommended to give the floor one final rinse with fresh water. Rinse the area until the run off water is completely clear. There should be nothing on the surface prior to the staining step. Staining results are dependant on the thoroughness of this step.

If there is any type of sealer, curing agent or foreign substance on the surface of the concrete that does not allow liquid penetration, that substance must be removed. In order to determine if there is a sealer or curing agent, pour water on the concrete in various areas. If the water soaks in and darkens the concrete, there is probably no top coat and regular cleaning will suffice. If the water beads, something is on the concrete surface and must be removed prior the staining process.

Paints and sealers can be removed with a mild, non-acidic paint stripper and a scraper but if the surface is porous, remnants may reside in the pores. Therefore, grinding or sandblasting may be required to remove synthetic substances such as concrete sealers, paints or oil stains. Oil stains are sometimes best removed with a non-chemical degreaser. Grinding and/or sandblasting might also be necessary if a test area is fully cleaned and it becomes clear that the concrete is too weathered to accept the stain. The necessary minerals may have been washed away with time and therefore a new layer of concrete should be exposed- achieved with grinding, sandblasting or adding a micro topping.

DO NOT acid wash the concrete surface as it will almost certainly harm and/or remove the necessary reactants in the concrete and staining may become impossible. Always defer to grinding and/or sandblasting if the surface has any sort of topcoat. Grinding and/or sandblasting will bring a new, clean and more absorbent layer of minerals and aggregate to the surface and consequently, better staining. Also, rough floors or broom finished floors often lose their color faster too because the concrete wears away quicker so keep this in mind as well. Sanding/grinding in such circumstances, in order to get a smoother finish may be a good idea.

TESTING:

The resulting color of concrete acid stained surfaces will vary from floor to floor depending on the composition, age, texture and temperature of the concrete. As a result, the exact color is not predictable and a test area is necessary. Since the color results are unique to every floor, colors may be slightly different from those on the color chart.

Cleaning the test area just as you would the entire 'to-be-stained' area is very important as this can also affect the outcome. Once the test has been conducted and the color is acceptable, keep in mind that most sealers will darken the stained surface. You can seal the test area to see the final outcome, but note that this area will no longer be penetrable by stain or any other solution.

Please note: it is always easier to stain an area darker but it is near impossible to stain an area lighter. Therefore, if you believe the stain will be too dark, make the first test with a diluted (with water) solution. If it is too light, then simply use a more concentrated solution and test a nearby area to compare. However,

if an area is stained dark from the outset, it will be difficult to lighten the color as the darker shade will dominate.

Additionally, there are some floors that will not accept *Triple-S Concrete Acid Stains*. Concrete exposed to harsh elements such as rain, water run-off and snow may lack the necessary minerals for concrete acid staining. Over time, exposure to the elements may have washed away the necessary minerals and these floors may not be stainable. In these situations, the top layer may have to be grinded off to reveal a new layer of aggregate that will accept the stain, or a micro topping of new concrete may need to be applied.

To open up surfaces for stain penetration, diluting the stain with acid and using a higher acid concentration can also help open up the surface and etch the solution into the surface. Sometimes, grinding or sanding can help. To grind a large floor, either rent a grinder from an equipment house that rents machines by the day or by the hour or use a buffing machine with 60-100 grit sand paper.

If grinding is not the desired option for preparing a weathered floor, a very thin layer of concrete, sometimes called an overlay or a micro-topping, poured on top of the original concrete can be a very practical alternative. Not only does it cover any and all blemishes in the concrete, it also allows you to choose the color of the concrete. White concrete micro-toppings provide a wonderful surface to stain because of their light color; the concrete acid stain colors are usually very vibrant if the micro-topping is of a lighter shade (i.e. white). Concrete acid stain generally shows up very well on micro-toppings and if the floor has a lot of blemishes, has a thick topcoat or has been previously stained, this is a good option to consider.

APPLICATION:

Once the surface has been cleaned thoroughly and all debris has been removed, allow the surface to fully dry. Once fully dry, the adjoining walls and plants should be taped off so as to prevent contact from potential runoff, spills or over spray.

Follow SAFETY PRECAUTIONS as described in *Caution* section.

For a large area, stain solutions are best applied with an acid-resistant, hand pump sprayer that can be bought from Triple- S Chemicals but application with a brush or roller is suitable as well. Spraying applies the stain more liberally and equally than any other application method (the sprayer MUST be all PLASTIC, the solution will corrode metal parts). Additionally, a sprayer eliminates the risk of roller marks and/or visible brush stroke marks.

If the area is small, then rolling or brushing is acceptable. When brushing, use circular motions so as to prevent visible brush marks on the concrete. Avoid splashing, dripping and/or puddling as these areas will show distinct lines when dry. Also, only use fresh stain on new surface areas; do not spread reactive residue from an already stained area to a new area. Always use fresh stain.

When *Triple-S Concrete Acid Stain* is applied, it will "fizz" and a reactive odor and gas may arise. Some colors will fizz more than others and this can be for any number of reasons. Some concrete may be too weathered and devoid of the necessary minerals to react with the stain and little reaction will show, or this may also depend on which particular *Triple-S Concrete Acid Stain* is being used. Five of Triple-S's stains are dye based stains and therefore, contain coloring agents rather than inorganic salts. These colors are **Burgundy, Brick, Yellow and Sea-Blue** and these stains will not 'fizz' like the *Triple-S Concrete Acid Stains*. Also, certain colors, such as *Tan* and *Weathered Copper*, often times react strongly with concrete and will provide a very strong reaction and therefore 'fizz' a lot.

Please note: the color *Off-White* will react very strongly with concrete and definitely fizzes and foams more than any other concrete acid stain; it is unique and acts almost as a bleach and therefore, has certain limitations. Firstly, it will remove any other color if it is applied on top of another color in a multi-color

design. Secondly, in order to preserve the color of the *Off-White* stain, it must be sealed with the sealer, **WSL-45** (flat or glossy).

When applying *Triple-S Concrete Acid Stains* to a larger area, spraying is the recommended method. The walls should be taped off, up to three or four feet up the wall. The floor, approximately six inches from the wall, should be stained using a brush or roller and not sprayed, in order to reduce the risk of residual spray affecting the walls.

Then, with an acid resistant, all plastic hand pump sprayer, spray the remaining sections of the floor. (*Triple-S Chemical Products, Inc.* sells an acid resistant concrete acid stain sprayer). Apply enough stain to fully saturate the surface of the floor but avoid puddling. Also, keep the spray tip approximately 12 inches away from the surface of the concrete in order to apply the stain liberally.

As one person is spraying the solution onto the floor, a second person should be standing nearby with a acid-resistant nylon bristled brush. As the stain is applied by person #1, person #2 should immediately scrub the stain into the surface. This helps the stain penetrate the surface better and also helps to provide a more even finish. Again, scrub in the new stain but do not spread reactive residue from an already stained area to a new area. Scrubbing should also be done when applying with brush or roller. This step is important and should not be left out.

If a second color is applied, either for darkening purposes or for a mixed color effect, please refer to the **Color Mixing** section. Allow the first stain to dry and then apply the second stain in a similar fashion. A second layer of the same color can be applied if the first application did not produce the desired intensity of color. A second layer can also patch up areas where the first coat of stain did not take well.

For a mottled and varied appearance, applying multiple colors in sporadic areas, not fully covering the entire floor as done with the first color, can produce a beautifully mottled and marbled look. Integrating the colors smoothly, without showing distinct color lines can be hard to achieve. Sometimes, wetting the surface lightly with water before applying the second color can help the second color blend in well, without showing distinct lines. Allow approximately four hours to fully dry. This multiple color process can be fairly difficult to do and should be practiced on a different surface or left to professionals.

Similar application procedures can be used for vertical concrete and again, spraying is the recommended method of application. Drip lines are a concern for vertical applications such as walls and therefore, a sponge or rag should be used to remove the excess stain. Wetting the wall slightly will also help the stain disperse throughout and avoid distinct drip lines. Do not over spray as over saturation could cause dripping and these areas will stain darker and be noticeable.

NEUTRALIZATION:

Once all layers are dry, there will be a mildly acidic, dust like residue on the surface that must be rinsed off with a water and Baking Soda mixture or an Ammonia and water mixture. This will neutralize the acid and help prepare it for the **Sealing** process. The mixture should contain approximately 1 cup of Baking Soda per 5 gallons of fresh water or 1 quart (32 ounces) of Ammonia per 5 gallons of fresh water. Triple- S recommends the Ammonia and water solution due to the fact that Ammonia is a liquid and by nature, is easier to remove than a powdered solution such as baking soda.

Apply the solution with a spray or mop and allow it to react with the residual stain on the surface. A wet-vac, mop, inert material or saw dust may be used to remove the neutralizing solution and then the floor should be rinsed one more time, with fresh water. A pH number of 7 or higher will indicate that the neutralization process has been successful. For all acid stain residues, dispose of water and equipment in accordance with local, state and federal regulations. Run off must be prevented from entering gutters or sewers.

If using a mop and bucket, use two buckets of water. One bucket should be used to rinse the mop and the second bucket should be filled with clean, fresh water for the floor. Continue mopping until there is no more residue being lifted from the surface of the concrete. Rinse until run-off water is completely clear.

Please note: Certain colors, such as *Black* and *Dark Brown*, contain a high amount of raw materials and must be shaken well, prior to use, in order to maximize their potency. Additionally, due to the higher concentration of raw materials, please be certain to fully clean and neutralize the floor before sealing. Colors such as *Black* or *Dark Brown*, with their high concentration of raw materials, or colors that produce a very potent reaction and also more reactionary residue, such as *Tan* or *Weathered Copper*, will require a more thorough cleaning.

SEALING:

To provide long lasting durability and to enhance the color of your newly stained floor, it is important to seal the stained area with one of the following sealers: **WSL-45**, **AL-70**, **UT-70/30** or **UT-9500**. Sealing with sealers other than Triple- S sealers can cause compatibility issues and user assumes all risk when doing so. All of Triple- S' sealers meet Southern California's strict V.O.C. (volatile organic compounds) requirements of less than 100 grams/liter.

WSL 45

- Water-based
- Available in flat or glossy
- Non-flammable
- For interiors & low traffic areas
- Lasts 1-2 years indoors

The first coat usually penetrates the concrete pores and therefore, it is advisable to apply a second coat once the first coat is dry to ensure durability. The best application is with a rayon mop- simply apply to a clean floor with a rayon or micro fiber mop and **WSL-45** will dry to a crystal clear finish in 4 hours but we recommend letting it dry for 3 more hours (7 hours total) before walking on the surface. One gallon will cover 200-300 square feet, depending on the porosity of the surface.

AL-70

- Solvent based
- Lasts 3-4 years indoors/ 1 year outdoors
- Available in flat or glossy
- For interiors & exteriors/low traffic areas

One gallon will cover 200-300 square feet, depending on the porosity of the surface. Be sure to have good ventilation while working with this sealer and a respiratory mask should be used to avoid breathing in the fumes. Apply with an airless plastic Hudson type sprayer and lightly backroll one time. Let it fully dry before walking on the surface. If necessary apply a second coat 6-8 hours after the first coat and definitely within 24 hours of the first coat. Use acetone to clean the applicators. **AL-70** is flammable so extra precautions should be taken while applying and storing. Store at room temperature and keep away from heat and fire. **AL-70** comes in a gloss or flat finish however, the flat finish should never go directly on top of concrete. It can only be applied on top of a layer of **AL-70 Glossy**.

UT- 70/30

- 1 part polyurethane
- For medium traffic areas/indoors & outdoors
- Lasts 5-6 years indoors/2-3 years outdoors

UT-70/30 is a single component, solvent based polyurethane that will provide a nice, shiny 'wet-look.' It is an easy to use, one part sealer that will provide a more durable finish than **AL-70** and should be applied in medium traffic areas. **UT-70/30** only comes in a semi-gloss finish, can be sprayed on with an airless plastic Hudson type sprayer with a light one time back roll.

UT-9500

- 2 part polyurethane
- Available in flat or glossy
- For heavy traffic areas
- For professional use only

UT-9500 is used for high traffic areas such as restaurant floors, boutique floors, hair salon floors and public buildings. It is designed as a UV resistant coating, it is suitable for most types of concrete and will last longer than most other sealers. **UT-9500** is impact and abrasion resistant and should not be applied in temperatures below 60°F or above 90°F. **UT-9500** is designed for use by professionals only and is not meant to be used by those unfamiliar with 2 part floor sealers. **UT-9500** comes in a gloss or flat finish however, the flat finish should never go directly on top of concrete. It can only be applied on top of a layer of **UT-9500 Glossy**.

The best application method for Triple-S Chemical Products' sealers differs from sealer to sealer. **WSL-45** can be applied with a roller or sprayer but the recommended mode of application is with a rayon or micro fiber mop. For **AL-70** and **UT-70/30**, spraying is the preferred method of application. For **AL-70** and **UT-70/30**, a one time back roll is necessary. **UT-9500** is best applied by squeegee; laying the already mixed product on the floor and with a squeegee or notched trowel, spread the product evenly. Then use a lint-free roller to back roll one time only. Spraying is not always recommended because **UT-9500** may be too thick for the sprayer. Rolling **UT-9500** is also a good way to apply and more can be read about the application process on the product data sheet.

Always wear appropriate respirators when applying and spraying the sealers because spraying a sealer can make the sealer airborne which will create an unhealthy breathing situation for the applicators. NOTE: Apply sealers in thin layers. Several thin layers are always better than thick layers and too thick a coating can cause whitening of the sealer.

To protect your newly stained floor, applying a floor finish or a wax is recommended. After the floor is sealed, a floor finish or wax can be applied in order provide added resistance to scuffs and scratches. Several layers of wax are recommended- no less than three but as many as five or six layers. The more layers of wax, the more resistance to scuffs and scratches. Additionally, it is easier to apply more wax after a couple years of wear, than to reapply a whole new coat of sealer. The wax usually brings back the shine to the sealer and almost makes it look like a new layer of sealer has been applied. Therefore, owners should try and maintain the floor finish and never allow the wax to wear down to the sealer. Floor waxes can be bought at most janitorial stores or you can use **Triple- S Floor Wax 55** which provides a wonderfully glossy finish.

Additionally, sealers and waxes will last longer if they are taken care of well. Periodic cleaning, like any floor is a must. It should also be noted that debris such as sand and dirt can scratch most sealed surfaces. It is best to keep the finished floor free of anything that can harm the surface. Clearly, as people walk on a floor, they will introduce dirt and other foreign materials to a floor. It is a very good idea, in order to preserve the shine and beauty of a newly stained and sealed floor, to place a doormat at the entrance of a stained area. This will prolong the life of the sealer and wax.

NON SKID GRIT:

Triple- S' sealers can make any floor slick and slippery, especially when wet. Triple- S Chemicals therefore, recommends the use of slip-resistant aggregate in all coating or flooring that may be exposed to wet, oily or greasy conditions. The grit can be incorporated into the materials using different methods to achieve varying profiles and degrees of slip-resistance. However, even textured surfaces can be slippery under certain conditions. Triple-S Chemical Products, Inc. will not be responsible for injury incurred in a slip and fall situation. It is the end users' responsibility to provide for their own safety and to determine the suitability of these coatings for their particular application. The best way to apply the grit is to 'sandwich' it in between layers of **AL-70**, **UT- 70/30** or **UT-9500**. Triple- S Chemicals does provide slip-resistant aggregate ('grit') for a minimal charge. 2-3 ounces by weight is the recommended amount of grit per gallon of sealer.

The following example will help you determine how much grit to use for a specific site. Keep in mind that if the application is outdoors and a lot of traction/resistance is sought to prevent slipperiness when wet, Triple-S recommends 3 ounces per gallon. For a site that doesn't need much traction/resistance, one could use 2 ounces of Grit per gallon. Therefore, for a 2,000 square foot job, calculate 200 feet/gallon of sealer which equals 10 gallons. Then multiply 10 (# of gallons) by 3 (amount recommended per gallon) which equals 30 ounces of grit for a high traction finish. If less traction/resistance is sought, multiply 10 (number of gallons) by 2 (amount recommended per gallon) which equals 20 ounces of Grit per gallon.

COLOR MIXING:

With *Triple-S Concrete Acid Stains*, old and dull concrete can be transformed into beautifully colored, marble-like floors. Sometimes, several colors can be used on one floor and there are two ways to do this.

Firstly, two of *Triple-S Concrete Acid Stains* are sometimes mixed together in liquid form and the resulting color will be a mix of the two. However, due to the nature of concrete acid stains, colors may not react well together. Some colors may dominate others. Always test. Mixing the **Dye Based stains** with the **Concrete Acid Stains** is not recommended.

Secondly, the more common form of mixing two or more colors is to layer them on the concrete with different applications. This is done by applying one layer of stain, letting it dry and then applying a second stain. The first color (the lighter color) is sprayed to cover the entire slab and the second color (the darker color) is usually only applied in sporadic areas for contrast. This procedure is usually done with sprayers to apply the stain very liberally. If done correctly and coated with a glossy sealer and floor finish, the finished floor can replicate beautiful marble floor.

A weathered and varied appearance can produce a beautifully mottled and marbleized look. This multiple color process can be fairly difficult to do and should be practiced or left to professionals. Usually, a base color is used to cover the whole floor and then several other colors are applied in sporadic areas, not fully covering the entire floor as done with the first color. Integrating the colors smoothly, without showing distinct color lines can be hard to achieve. Sometimes, wetting the surface lightly with water before applying the second color can help the second color blend in well, without showing distinct lines. Allow approximately four hours to fully dry.

If a second color is applied, more times than not, we recommend washing off the residue from the first color before applying the second color. This is however something that must be determined on a per job basis. If the first color has a tremendous amount of residue, cleaning the floor in between layers is recommended. If the first layer doesn't show much residue, the second coat can be placed directly over the first.

If the first coat provides a lot of residue, allow the first stain to dry, neutralize, clean the floor and then apply the second coat in a similar fashion. If the neutralizing and cleaning is not done, the second color will not work effectively. The second stain will simply lie on the residue of the first layer and never make contact with the surface of the concrete. For a mottled and varied appearance, apply the second stain in sporadic areas, not fully covering the entire floor as done with the first color.

For a double layer of two different *Triple-S Concrete Acid Stain* colors, please be sure to test the compatibility of the colors. Some colors may dominate others and therefore, layering of different colors is not always recommended.

Artistic concrete design is becoming more and more popular by our users. For instance, concrete floors can be scored, stamped and/or saw cut to achieve desired effects either before or after staining. Stencils can be used on already stained floors as well. When the floor is sandblasted and the stencil is removed, the original concrete will be visible. This can be stained a different color or left as is to enhance the effect of the stained

concrete. The artistic and decorative concrete businesses are booming and will only become more popular as concrete acid stain becomes a permanent fixture in the concrete world.

CAUTION:

Triple-S Concrete Acid Stains are CORROSIVE LIQUIDS and must be handled with care. Users must understand that appropriate care must be taken as in the use of other building and construction methods. Appropriate safety precautions must be taken.

Wear a respirator, chemical splash safety goggles, rubber gloves, boots and protective clothing. Provide adequate ventilation. Wear P100/Hydrogen Chloride respirators.

First Aid:

Eyes- Hold lids away from eyes and flush eyes immediately with plenty of fresh water and then seek medical assistance.

Ingestion-drink plenty of water and seek medical attention immediately.

Skin- Flush skin with plenty of fresh water and wash with soap. Seek medical attention.

Clothes- Remove contaminated clothing and flush skin with plenty of fresh water and wash with soap. Do not wear contaminated clothing until washed thoroughly.

Triple-S Concrete Acid Stain contains harmful chemicals: hydrochloric acid and iron chloride. Avoid breathing in their vapors or mists. Avoid contact with skin, eyes or clothing. They can cause severe eye and skin irritation and burning. Contact with broken skin may cause ulcers. Constant and/or repeated breathing may cause ulcers in the nasal membrane. These are industrial chemicals that may cause cancer. Risk depends on the duration and level of exposure. As with contact with other building materials appropriate protective measures must be taken to avoid such exposure.

Wash thoroughly after use and close lids to bottles tightly. Do not reuse bottles and dispose of them according to local, state and federal laws.

KEEP OUT OF REACH OF CHILDREN!

Safety Data Sheets (SDS) are available for all of our products. Call **Triple-S Chemical Products, Inc.** to request the appropriate SDS for the product you are interested in.

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