

## SuperStone ChlorStain Technical Data

### DESCRIPTION AND USE

SuperStone ChlorStain has been formulated to color natural concrete or to modify the color of previously colored concrete. ChlorStain reacts with the surface of cured cementitious surfaces to produce unusual and permanent color effects.

SuperStone ChlorStain creates uneven, mottled, variegated and/or translucent color effects. The subsequent results are similar to the natural shadings of stone or the aged appearance of a time worn patina. The special color effects give the surface distinctive and lasting stained surfaces. This ChlorStain effect is excellent for exterior and interior floors, walls and artificial rock. The color and pattern is unique to each stained concrete surface and cannot be duplicated with other coloring materials.

ChlorStain cementitious surfaces give the aged appearance of structures of early civilizations. These stained surfaces are striking in appearance and add to the artistic features of modern sculpture, walkways, concrete walls and drainage canals. Malls, plazas, patios, lobbies and many other concrete structures are given warmth and natural like beauty when coated with ChlorStain. The ChlorStain treated surfaces have subtly shaded color with natural beauty. ChlorStain treated floors can be polished with slip resistant clears to give an easy to maintain surface.

ChlorStain cementitious surfaces have excellent durability and abrasion resistance. The stain colors become a part of the surface. The surfaces will be fade resistant and will not chip, crack or peel. The ChlorStain surface will only wear as the cementitious surface wears. A ChlorStain cement surface is superior to the concrete coated with water or solvent base pigmented stains.

On **new concrete** installations, a new range of color effects can be obtained by coloring the new concrete with SuperStone Concrete Hardener in one of the many standard colors before the application of the ChlorStain. The application of SuperStone Solvent Base Clear Sealer or SuperHydro Water base Clear Sealer over a ChlorStain surface highlights the mottled, variegated or streaked chemically stained surface producing a clear, high gloss finish. The clear coatings help protect the stained surface during everyday use. Two coats of clear are recommended for initial application. On an annual basis, the surface should be high pressure water cleaned and given one coat of the clear sealer. See the SuperStone label directions on the sealers for further information.

### LIMITATIONS

ChlorStain will not hide surface discoloration, blemishes, cracks or other construction errors. The color produced by ChlorStain will vary from surface to surface. These color differences are dependent upon chemical composition, porosity, age, texture and color of surface, preparation of surface, application, number of ChlorStain coats, experience of the applicator and the application of a clear sealer. Each of the above can affect the color appearance as to the degree and type of color shading and the depth of the overall color. In order to verify the approved final appearance, a sample test should be

made on the same surface to be stained. Mottling and wide color variations will occur. The exact color shade and the depth of penetration is not predictable. **Some concrete surfaces are not possible to be successfully stained.** When dirt, grease or other contaminants are left on the surface, the ChlorStain penetration may be blocked. Weathered concrete that has been exposed to water run off or dripping over long periods of time may lack the necessary chemical makeup for the proper chemical stain reaction. Different batches of concrete can vary on the same job site. These, as well as patched areas, can vary significantly as to color from adjacent areas. The wear resistance of the ChlorStain colored concrete is totally dependent on the strength and abrasion resistance of the concrete surface over which it is applied. High traffic areas will need annual maintenance and applications of a clear sealer.

### COMPOSITION AND MATERIALS

ChlorStain is composed of water, hydrochloric acid and water soluble metallic salts. The ChlorStain penetrates the substrate and reacts with the chemicals in cured concrete. This reaction produces insoluble color deposits in the pores. As the colors of ChlorStain vary, so does the complex chemical composition of the stain which contains no resins or pigments. The reaction etches the concrete slightly, removes laitance and promotes a more effective chemical reaction and deeper color penetration.

### GOVERNMENT STANDARDS AND REGULATION

ChlorStain complies with applicable air quality standards.

### COLOR EFFECTS

ChlorStain is manufactured in ten standard colors that approximate the color card. The color produced from each standard is unique to each concrete surface and may differ significantly from the [color chart](#). Experimentation with stain colors and application methods are required. This should be done on the job site. Wide color variations and patterns are normal. This is the uniqueness of ChlorStain. The variations will be emphasized when a clear coat is applied. To produce a deeper color effect, two applications must be made. To get additional color shades two or more ChlorStain color standards can be intermixed **before** application, or one color applied over a second color while wet. A sequence of colors may also be applied using a different color for each application. With the ten ChlorStain colors the color possibilities are substantial. For other color effects the ChlorStain may be applied over concrete previously colored with SuperStone Concrete Hardeners. New concrete will give more intense color effects than older or weathered concrete.

### SPECIAL EFFECTS

Various dilutions of ChlorStain can be used. Application with a stiff brush and a circular movement of the brush on the surface or an even, hard, back and forth motion can be used. A spotted color effect can be obtained by sprinkling a **granular**, iron soil supplement over the surface during the stain application. Also spraying, using a hand held plastic spray bottle, the stained surface with a darker ChlorStain color. Laying or sprinkling absorbent material such as sawdust over the wet stained surface will produce darker colors under the inert material.

## **SLIP RESISTANCE**

To maintain slip resistance of ChlorStain floors, only stain slip resistance concrete surfaces such as broomed, swirl, sand blasted or most imprinted concrete. For interior flat floors, a uniformly trowelled surface is desired. A test area should be stained with ChlorStain and checked for adequate wet and dry slip resistance.

## **COVERAGE**

A minimum of two separate ChlorStain applications are normally required. Only one coat may be required over SuperStone Concrete Hardener. The ChlorStain should be applied full strength. The coverage will vary greatly based on the condition of the substrate. The coverage should be seventy five to one hundred square feet per gallon for two applications. The square footage equates to one hundred fifty to two hundred square feet per gallon per coat.

## **SHELF LIFE**

Keep away from direct sunlight. Under normal conditions, the shelf life should be at least one year. Keep containers tightly closed and upright.

## **CAUTION**

Corrosive liquid - Can cause eye and skin burns. Can cause severe eye irritation, possible blindness. The vapor or mist can cause irritation of nose, throat and lungs. Important: See other cautions on the back panel of the label and in the technical literature. Contains hydrochloric acid, various chlorides such as cupric, ferric or manganous and sodium dichromate. Do not get in eyes, on skin or clothing. Wear acid vapor mask (NIOSH/MSHA TC 23C approved), goggles, gloves, protective clothing, chemical resistant apron and boots. Use with adequate ventilation. Do not breathe vapor or mist. Close containers after use. Store in tightly closed containers in upright position. Keep away from combustible materials and all heat sources.

## **First Aid**

Flush contaminated areas immediately with water. Remove contaminated clothing and seek medical attention.

## **Eyes**

Hold eyelids apart while flushing material out using large amounts of clear water,

## **Ingestion**

Drink several glasses of water or milk. Get medical attention immediately.

## **Skin**

Wash thoroughly with soap and water. Remove contaminated clothing and footwear and wash before reuse. Dispose of contaminated shoes.

## **Inhalation**

Move to fresh air at once. If symptoms persist or develop, get medical attention.

## TEST SECTIONS

ChlorStain is a unique chemical concrete stain. Experimentation, skill and practice are needed to discover the multitude of patterns and colors possible. The following will determine the end result: Chemical composition of concrete, mix design, porosity, age, texture and color of concrete. The ChlorStain color, preparation methods. Application procedures, number of coats, experience in the use of the material and the finish coating materials and methods used will also determine the end result. To verify the approved appearance, a test section should be produced prior to the general application of the chemical stain. This test should be done on the job site on the specific surface to be stained. The test area should be of adequate size for a good visual inspection. The same worker, equipment and techniques should be used on the test area and the finished job site.

## EQUIPMENT

ChlorStain should be applied by brush and scrubbed into the concrete surface. On large areas the ChlorStain can be hand-pump sprayed to apply the stain to the surface while scrubbing. For special effects, sponges, lambs wool applicators or acid resistant spray bottles can be used. All surface preparation and application procedures should be tested before use on the job site.

### Brushes

Brushes should be uncolored, acid-resistant nylon bristles with a medium stiffness and able to hold liquids. Brushes with colored bristles can discolor the surface. Normal push brooms should not be used. Rotary machines splash liquids and should not be used. Rollers and mops do not give enough surface friction and should not be used. Use wide mouth acid-resistant non-streaking plastic pails. The working container should be wide enough for the entire bristle section of the applicator to be dipped into the ChlorStain. Plastic buckets with rubber castors are recommended to prevent marking the concrete surface to be stained. Never use metal containers. Airless sprayers are not recommended. Use a hand pump with a fan tip. All parts must be acid resistant plastic. Residue and runoff can be removed with an acid-resistant wet vacuum or absorbed by scattering sawdust over the surface or by wiping with rags.

## CLEANING

Horizontal or vertical concrete should be pressure washed with a fan tip and adjustable pressure to 2500 psi. and up to four to five gallons per minute. Non-marking hoses and hot water capability would be helpful. For cleaning flat areas, a rotary floor machine operated at 175 rpm's equipped with brushes or securely held pad-driver. For cleaning, a stiff bristled bassine or nylon scrub brush is recommended. For larger areas a walk-behind automatic scrubbing machine should be used.

## PREPARATION

As previously mentioned a test section should be completed and approved. Slip resistance should be checked for large flat traffic areas. Surrounding areas and foliage should be protected prior to staining. The work area should be roped off. All adjacent vehicles removed and the roped areas closed to foot or vehicular traffic. Prior to

staining, the area should be checked to remove or reduce hard water and alkali deposits. Sprinklers and fountains should be adjusted to avoid wetting the stained surface. If water fixtures, such as fountains are involved, soft water should be used in place of hard water. When rain is expected within one to two hours do not stain. Rain will wash the chemical stain from the surface prematurely. The runoff may affect adjacent areas or harm adjacent foliage. On hot and/or windy days the ChlorStain will dry faster. This may require more material or a second application. Before applying ChlorStain the concrete surface must be cleaned to remove all dirt, grease, oils and plaster stains. Previous coatings, water repellents and adhesives should be removed with a scraper or commercial paint stripper. **Acid wash should not be used prior to applying ChlorStain.**

New concrete should be allowed a minimum of fourteen days to cure, preferably twenty-one to thirty days depending on weather conditions. **Liquid curing agents should not be used.** For best results use new and unwrinkled non-staining high quality curing paper. Do not overlap the paper. This could cause color changes in the ChlorStain surface. For uniformity of color, the new concrete should be the same age using the same curing method. Immediately before chemically staining, the concrete must be thoroughly cleaned. The concrete should be pressure washed or rotary machine cleaned and swept. Then rinse the surfaces thoroughly. Aged concrete should be cleaned similar to the new concrete. The cleaned surface must be penetrable. This can be checked by spotting the surface with water. The water should darken the surface and be readily absorbed into the concrete. If the water "beads" and does not penetrate, additional surface preparation and testing must be done. On dense hard trowelled concrete light sand blasting or an acid wash with a quart of muriatic acid to five gallons of water. The cleaning method used depends on the condition of the concrete. Various detergents and commercial cleaners should be considered and tested. Pressure washing or rotary floor machining is normally required. After cleaning, rinse until the rinse water is completely clean. Wet vacuuming may be helpful to remove water from interior floors. All contaminants must be removed from the concrete before staining. If all else fails, the surface must be sand blasted. All sand must be removed from the surface before using ChlorStain.

## **APPLICATION**

All surfaces must be **clean and dry**. Adjacent landscaping and surfaces should be masked and/or spills, over spray and runoff. The entire work area should be roped off. All nearby vehicles removed. Any adjoining walls should be masked. The work areas should be divided into small work sections using natural dividing lines, such as walls, joint lines or other stationary features. It is important to control section to section wet edges and overlaps. **Do not step on the wet ChlorStain areas.** All safety precautions must be followed including wearing full protective gear.

**SuperStone ChlorStain should be applied full strength.** Do not "puddle". Apply a uniform film thickness. The liquid ChlorStain color will not resemble the final color produced on the concrete surface. The color changes as the chemical reactions take place. SuperStone ChlorStain has a slight bubbling or fizzing action when applied to the

concrete. If this does not happen, the surface was not properly prepared. Additional surface preparation will be required. The ChlorStain should be transferred to the surface by brush or spray and **immediately** scrubbed in. Put the ChlorStain in a wide mouth acid-resistant container. Lift the liquid ChlorStain from the container to the concrete surface with brush bristles upward to reduce splashing. On large areas or on vertical surfaces spray equipment may be used. On large areas one workman uses a brush a few inches behind sprayer, scrubbing the ChlorStain into the concrete. Whether brushed or sprayed, the ChlorStain must be scrubbed into the surface by brush as soon as it touches the concrete. Use a circular or figure eight motion. Work small areas and keep the brush in constant contact with the surface in a continuous motion. The ChlorStain should be spread out until all the fizzing action ceases. To avoid lap marks, the reacted surface ChlorStain **should not** be spread to the new work areas. It should be brushed back over the section just treated. New applications of ChlorStain should overlap the previous stained area. **A wet edge must be maintained.**

During the application and brushing of ChlorStain, the surface should be uniformly saturated with the liquid stain. **Do not splash, drip or allow** the ChlorStain to puddle in joint areas or other depressions unless a changed color affect is desired in those areas. Do not step on the wet surface. Footprints will appear darker than the adjacent areas. If stepped on by accident, the footprints should be brushed out immediately.

When applying ChlorStain to vertical surfaces, application should start at the bottom and work upward. **Excessive run down should be avoided.**

The ChlorStain reaction time is dependent on wind, temperature and humidity. The ChlorStain wet and/or dry should remain on the surface for a minimum of four hours. Prevent contact with the surface until the stain residue has been removed and the surface rinsed.

For on color or mixed color applications, the ChlorStain surface should not be touched until the final application has been applied. When different colors of ChlorStain are to be applied on top of each other, the first color residue should be cleaned off before the application of the second color and/or the third color, etc. This allows the color effect of the last color applied to be evaluated before another color is applied.

After the final application of ChlorStain has remained on the surface for at least four hours, all residue must be removed by **wet scrubbing** with a commercial detergent. The surface must be rinsed clean. Be sure the runoff does not stain adjacent areas or harm plants. All residue, run off, cleaning water, and absorbent materials must be discarded and disposed of in accordance with all local, state, and federal regulations.

## **SEALING CHLORSTAIN SURFACES**

After the completion of the last application of ChlorStain, the surface should be allowed to dry at least twenty-four hours. This is totally dependent upon weather conditions. The surface should be dry prior to the application of the clear sealer. Apply one coat of SuperStone Solvent Based Acrylic Sealer or SuperHydro Acrylic Water Base Sealer.

Allow an overnight dry and apply a second coat. Use an airless sprayer, brush or roller. Apply the clear at the rate of 300 to 350 square feet per gallon. All floor surfaces should be inspected to verify the wet and dry slip resistance prior to removing the barricades. Allow at least twenty-four hours for foot traffic and seventy-two hours for vehicular traffic.

### **JOINT SEALING**

All joints, either on floors or vertical walls that would allow water to penetrate, should be sealed with a good quality caulking compound. Colored caulking is recommended. A color should be chosen that gives the best aesthetic appearance based on the color of the ChlorStain used.

### **AVAILABILITY**

SuperStone ChlorStain is available from the Opa-Locka, Florida plant or one of our domestic or foreign licensees or distributors.

### **MAINTENANCE**

ChlorStain stained and sealed concrete should be swept off as needed. Spills should be cleaned up when they occur. Hose off loose dirt. Soiled areas should be scrubbed or mopped using a commercial detergent. Interior floors that require polishing should be maintained by using appropriate commercial emulsion type floor polish. Follow manufacturers instructions.

### **WARRANTY**

SuperStone ChlorStain is warranted to be of uniform quality within manufacturing tolerances. Since SuperStone does not have control over its use, no warranty, expressed or implied, is made as to the effects of such use. The sellers and manufacturers obligation under this warranty shall be limited to refunding the purchase price of that portion of the material proven to be defective.