

Treat Swimming Pool Stains

Joseph P. Laurino, *PhD, MBA*

Most metal stains can be removed from plaster, fiberglass or vinyl pool surfaces. The chemistry to accomplish this, however, is fairly complex and should only be done in consultation with a pool service professional knowledgeable in metal stain removal. The steps outlined below represent an overview of the process and should not be viewed as a detailed description of the stain removal procedure.

Step 1: Determine the cause of the stain. Pool stains are caused by organic material (such as algae, leaves or other plant debris), metals, or water trapped beneath the plaster surface. Brush the surface of the pool to see if the stain is removed. If it lifts, then you have an organic stain. If brushing does not work, use a vitamin C tablet to determine whether the stain is caused by metals. Just rub a vitamin C tablet on the stain for a few seconds. If the stain lifts or lightens, then you have metals. If this does not work, you may have an algae or a bacteria that is more difficult to remove or “hydration”, which is water trapped beneath the pool surface.

Step 2: Eliminate any metal in the pool water. Place a [CuLator® Metal Eliminator and Stain Preventer PowerPak 1.0](#) in the skimmer basket or a CuLator® Metal Eliminator and Stain Preventer [Ultra Powerpak 4.0](#) in the pump basket three to four days prior to starting the stain treatment. This will begin the process of eliminating any metals that are in the pool water, and will greatly speed up and simplify stain removal and subsequent metal elimination.



Step 3: Prepare your pool equipment. Turn off all automatic chlorinators, chlorine generators, UV systems, ozone generators and metal ionizers. If possible, bypass all pool accessory hardware, such as pool heaters, chlorine generators and other non-filtration systems in contact with the pool water.

Step 4: Remove the stain from the pool surface. Use a stain removal product to release the stain from the surface of the pool. These chemicals typically contain ascorbic acid, citric acid, oxalic acid, or a combination of two or all three. Follow all label directions carefully, making sure to wear appropriate protective clothing and face protection.

These stain removal products will immediately react with the free chlorine in the pool water. Because of this, chlorine levels should be brought down below 1ppm prior to the addition of stain removal products. (NOTE: Because free chlorine levels are kept very low during this entire process, stain removal is not recommended during warm or hot temperatures, as this favors the growth of algae.)

Step 5: Measure the level of metals in the pool water. After the stains have been removed, use a “total” metal test kit to measure the level of metal in the pool water. It is imperative that both free and complexed (sequestered) metals be measured when determining the *total metal concentration* (metal load) of the water. Make certain the metal test kit contains a releasing agent that is added to the water sample. ([Hach Total Iron Test Kit](#) and [Hach Total Copper Test Kit](#))

Step 6: Balance the pool water. Restore pH, alkalinity and hardness levels to their ideal ranges.

Step 7: Use a sequestering agent to temporarily protect the surface. Sequestering agents are soluble metal chelators that are added in liquid form to the water; these temporarily protect the metals from oxidizing on the pool surface. Contrary to popular belief, sequestering agents only temporarily tie up dissolved metals and prevent them from oxidizing onto pool surfaces. Sequestering agents do not effectively remove or eliminate metals from the water; however, it is still important to use them in your metal control regimen.

Sequestering agents provide needed “insurance” by allowing for the addition of small amounts of chlorine; they also allow limited use of the pool while other methods are employed to eliminate the dissolved metals from the water. NOTE: DO NOT shock the pool with chlorine for three to four weeks. Add sufficient chlorine or other sanitizer/oxidizer to keep the level of free chlorine between 1-2 ppm. (NOTE: The reaction of chlorine with the excess stain removal product frequently results in cloudy water. This is only temporary and will resolve in one to two days.)

Step 8: Eliminate metals from the pool water. The final step in this process is to reduce the level of metal in the pool water to below 0.1 ppm. If only sequestering agents are used to treat staining, the stains will return in three to four weeks unless you continually add more sequestering agent and avoid high chlorine and pH levels. Therefore, it is important to eliminate the metals from the water using **CuLator Metal Eliminator and Stain Preventer**. CuLator is the world’s only insoluble polymer that rapidly and permanently binds metals and physically eliminates them from both fresh and salt water.

Using the level of metal measured in Step 4, determine the appropriate number of CuLator PowerPak 1.0 or CuLator Ultra PowerPak 4.0 products to use. The PowerPak 1.0 product eliminates 1.0 ppm total metals from a 20,000 pool, while the Ultra PowerPak 4.0 eliminates 4.0 ppm total metals from a 20,000 pool. CuLator Metal Eliminator and Stain Preventer is very easy to use. The polymer is contained in a cloth bag that is placed in the skimmer basket or in a cartridge placed in the pump basket. As the water passes over the polymer, metals

are quickly absorbed and eliminated. After 30 days, the bag is simply discarded along with the metals. The CuLator polymer does not dissolve in the water, impact the hardness of the water, or add phosphates; it is also non-toxic and does not interact with other pool chemicals or systems.

Step 9: Maintain balanced pool water. Upon completion of this process, confirm that your pH, alkalinity, hardness and chlorine levels are within the ideal range. Turn on all automatic chlorinators, chlorine generators, UV systems, ozone generators and metal ionizers. Place a fresh CuLator PowerPak 1.0 in the pool skimmer basket (or a CuLator Ultra PowerPak 4.0 inside the pump basket cartridge) to keep metal levels low and help maintain a stain-free pool throughout the season.

This process may take several weeks. The water may get cloudy as you bring your pH level up and you may begin to have algae growth.

For best results use the [No-Drain Metal Stain Eliminator Kit](#). This kit contains all the three steps you need to remove the stains, sequester the metals, and eliminate the metals with CuLator Ultra 4.0. Plus, the kit has all the detailed instructions!