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TORCHING THE SWIMMING POOL



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Torching

An Inexpensive Way to Eliminate Tough Pool Stains

by Greg Garrett

WHEN A PLASTER pool becomes severely discolored or stained, inexpensive remedies to fix the problem are limited, unless the pool professional is skilled in the process of torching. Torching can quickly remove a small water stain from plaster or a large discoloration that otherwise might require tearing out the pool surface and replacing it with a new one. It's a tool every pool professional needs to have in his or her arsenal today because it solves so many ugly discoloration problems cheaply and effectively.

The process requires training and practice to get it right. If the plaster surface gets too hot, if the surface is not appropriate for torching or if the torch flame is not burning "true blue" or clear when applied to the plaster, you could wind up with a bigger (more expensive) problem than when you started.

TORCHING GETS ITS START

In 1986, a particular white cement was used widely in the western part of the U.S. In one 24-hour period, 4,000 to 5,000 pools went from white to battleship gray. This event led to the founding of the National Plasterers Council, which developed the process of torching as a method to address what we classify in Section 6.5.2 of the National Plasterers Council Technical Manual as "radical departure from the anticipated color.")

Torching can be used in a variety of different situations, including discoloration from:

- Water from inlet fittings
- Water from sprinklers, rain puddles
- Stopped water - "bath tub rings" and two-tone pools
- Drip marks
- Water from the back side of the structure (high ground water areas)
- Flooding, leaks, broken pipes
- Calcium chloride issues

- Low calcium hardness fill water (soft water)
- Severely scaled and solidified plaster dust
- Cleaning system track marks
- Differences in surface thickness (large and small)
- Etched surfaces
- Unique patterns.

TORCHING EQUIPMENT

Another inherent benefit of torching is that the equipment you need to improve many surface issues on a pool is simple and relatively inexpensive. It is no exaggeration that torching can lead to major improvements. I had a customer tell me that after his battleship gray pool was torched it looked better and whiter than when it was new.

Here is the equipment you need:

- A sump pump and shop vac - All water needs to be removed from the pool.
- Acid washing equipment - The pool needs to be lightly acid washed to clean the surfaces before torching.
- Torching equipment - The typical 20,000-gallon pool requires at least two workers and three to four 5-gallon propane tanks per worker (a 10,000-gallon pool can be torched by one worker). The reason you need so many propane tanks is because once the torching begins, the tanks releasing the gas tend to "freeze up" over a period of time. Frozen



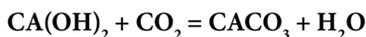
gas tank flames will not burn "true blue" or clear. When a tank freezes, the blue or clear flame burns red, yellow or orange, which indicates that instead of producing a reaction of heat and carbon dioxide, you are producing carbon monoxide and soot, which defeats the whole purpose of what you are trying to achieve through torching.

- Grinders, polishers, diamond hand pads - These abrasives are needed to remove surface roughness or spalls in a surface that happen from time to time. Sometimes small spots removed on a surface after torching are less than the thickness of a thin piece of paper. We use diamond pads to quickly buff those surfaces smooth.

- Weed burners – Weed burners are devices attached to a propane tank with a flexible hose attached to a handle equipped with a trigger lever, flame adjustment knob and a 14-inch pipe with what looks like a soup can on the end. There are two kinds of weed burners: those with solid cans and those with slotted or carbonated cans. The can allows about a five- to six-foot flame to come out under pressure. We get our weed burners from a company called Harbor Freight. We have developed specialty torches as well for small spaces in pools and spas.
- Specialty equipment – We use specialty equipment including polarized sunglasses, white rubber boots, branding irons, etc. Polarized sunglasses allow us to look at the walls of the pool from oblique angles and see moisture sweating out of the plaster. White rubber boots prevent scuffing the surface during the process. Finally, we place a circular device that looks like a branding iron over plastic floor pop-up heads to protect the plastic from being burned as we torch the pool.

HOW TORCHING WORKS

Although two workers can torch a 20,000-gallon pool in as little as 48 hours, we do not recommend it. That's because the real secret to torching is understanding the chemical process that takes place when heat is applied to the plaster finish. Burning flames produce heat and carbon dioxide which reacts with calcium hydroxide in the plaster and converts it to calcium carbonate. It is similar to chemical teeth whitening. When you torch the surface, besides converting calcium hydroxide to calcium carbonate, you are actually extracting moisture from the surface, which creates a "wicking" effect. Here is the chemical equation:



The carbon dioxide reacts with the calcium hydroxide and carbonates the surface. (Carbonation is fully explained in greater detail in Section 6.6.1.4 of the National Plasterers Council Tech Manual, 7th Edition.)

Rather than force torching, we torch over a number of days and slowly wick the water out. In Section 6.6.1.4, we

detail how carbonation proceeds inward and can actually penetrate the entire depth of the material. Rushing the process may lightly carbonate only the surface of the plaster material rather than all of it. When the pool is again filled with water, the original discoloration could reappear, which means that the whole process needs to be repeated (this time with more patience).

WHAT CAN'T BE TORCHED

Some surfaces, like glass bead surfaces, cannot safely be torched. When the glass bead is heated, it will either loosen as it cools or it will explode and spew glass fragments. Pebble surfaces can be torched, but very delicately. Wear safety goggles and/or impact-resistant sunglasses, because you will have little pieces of shattered pebbles flying at you. The best surfaces are normally flat, plaster-type jobs or white quartz. Colored finishes can be torched, but there are a few more steps involved and it is harder to do.

Torching should be done when it is cool outside (above freezing); high temperatures can increase shrinkage cracks. In New England and New York, for example, 60-degree to 70-degree weather is ideal.

A severely cracked pool is not a good candidate for torching because carbonation always increases "crazing cracks." It also amplifies cracks in the pool.

Do not allow the plaster surface to overheat during torching. If the moisture within the plaster gets overheated, the plaster could expand and blow apart. If you cannot put your hand on the surface and leave it there, the surface is too hot.

SAFETY, SAFETY, SAFETY

Number one safety issue: the homeowner must not be in or around the pool during the process. It is often hot and noisy work and a homeowner might be tempted to bring out refreshments for the workers. Tell homeowners that the best way they can help the workers is to keep away from the pool.

Never turn a torch on a frozen tank to defrost it; it is extremely dangerous. Always wear head and face protection. |



Greg Garrett is the director of technical services with the National Plasterers Council.

Greg Garrett will conduct the first-ever training seminar on torching at The Pool and Spa Show titled "Pool Torching 101—Torching Techniques for Cementitious Pool Surfaces." Go to www.ThePoolSpaShow.com for the latest information on all show seminars.

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