

# Essentials of a Good Start-Up Part 2

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This is Part 2 of an article based on the successful class created by Greg Garrett, Director of Technical Services for the National Plasterers Council and the **NPC Start-Up Card** (which can be downloaded from *The Shire*). In Part 1 of the article in our last issue of Product Education, we reviewed the steps that are essential to a good pool start-up. In Part 2, we'll add more details about the best tools and chemicals for the job, along with a couple of side bars.

*BONUS: Read through the following article, familiarize yourself with materials on The Shire, and take the test. The first 10 people to get 100% get a prize!*

## The Right Tools for the Job

Let's focus on the products needed to perform a proper start-up. The good news is that everyone reading this should quickly recognize each item, and chances are good that you have all of them in stock now. It's interesting to see how many of these items are used to prevent or remove plaster dust from the pool.

- A high quality **test kit** that is capable of testing pH, Total Alkalinity, Calcium Hardness, Stabilizer (CYA) and Chlorine. **Taylor Technologies K-2005** is a solid performer in this category. (a)
  - **NOTE:** The Taylor Test Kit booklet is a fantastic resource for Startup Techs that includes adjustment charts for pH, Alkalinity and Calcium Hardness.
- A high quality **nylon bristle brush** like the **PoolStyle Commercial Wall Brush PSL-40-0343**. (b)
  - You don't want to use a stainless steel brush because it may stain the finish if any of the bristles fall off and the coarseness of the stainless steel bristles could scratch the new surface.
  - **NOTE:** The pool needs to be brushed twice a day, every day for the first 30 days. Brushing the pool every day may seem like a nuisance, but it's one of the best things you can do to get the pool finishing looking good! Brushing the pool agitates the plaster dust and lifts it off of the finish so that it goes into suspension where it can be picked up by the pool filter. The residue from the plaster dust is why the pool filter will need to be cleaned at the end of the startup.
- A high quality **leaf rake** like the **PoolStyle Commercial Leaf Rake PSL-40-0342**. (c)
  - Any organic matter like leaves, bugs, palm fronds, or pine needles can stain the fresh pool finish if it is allowed to sink to the floor as the pool chemicals break them down and they decompose.
- A high quality **brush vac head** like the **PoolStyle Classic Series Vac Head PSL-40-0904**. (d)
  - **NOTE:** No wheeled cleaners allowed in the pool for at least 28 days!
- A high quality **pole** like the **PoolStyle Commercial Dual-Cam 8-16' Pole PSL-40-0344**. (e)
- **SuperPro DE Scoop SPG-40-0000** is the "Swiss Army Knife" of the pool industry. (f)



## The Right Chemicals for the Job

We talked about the adjustments that need to be made during the start-up to bring the water into balance. In reality, these adjustments will happen throughout the start-up process, not just on day one or two or three. That is part of the reason it takes eight trips to the pool to do a thorough start-up to keep balancing the water. During the first 30 days of the life of a new pool finish, the cement is hydrating which creates a very dynamic environment in the pool water as compounds change form and exchange properties.

Typically, the pH and alkalinity continue to rise quickly and if left unchecked, will soar well past 8.0 on the pH scale. Anything above a reading of 7.8 on the pH scale is considered "scale forming". When the water is in this state, plaster dust, aka "newly forming scale", proliferates. If the water is not brought back into balance, the scale will thicken, lighten the surface of the pool finish, and begin to harden and create a very tenacious bond. Basically – it's a heck of a lot easier to get rid of plaster dust than it is to get rid of scale. So the trick is to not allow the water to become scale forming.

## Here are the chemicals needed:

- **Muriatic acid:** four gallons minimum to adjust pH and alkalinity
  - pH should be reduced to between 7.2 to 7.6 on day 1
- **Sodium bicarbonate** to adjust pH and alkalinity
- **Calcium Chloride:** 50 lbs minimum to raise the calcium hardness levels
  - We sell both 77% and 94% strength calcium chloride. **NOTE:** The adjustment chart in the Taylor booklet refers to 77%. Page 52 of the Taylor booklet shows how to convert from one strength chemical to another.
  - Day two calcium hardness needs to be a minimum of 150 ppm.

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- **Sequestering agents** to prevent stain and scale formation
  - It is strongly recommended to get a sequestering agent in the pool on day 1
- **Chlorine** to sanitize the water
  - Do not add chlorine until after the first 48 hours
- **Stabilizer** which acts as “sunscreen” for the chlorine
  - Do not add stabilizer before day 4. Depending on the type of chlorine that will be used, adjust the Cyanuric acid levels to 30 to 50 ppm.



## Additional Information on Calcium Hardness:

There is a tremendous fluctuation in the Calcium Hardness of water used to fill swimming pools across North America. Where I live (San Diego), it is not uncommon for fill water coming directly out of the hose to be higher than the ideal range recommended by the pool industry (which is 200 - 400 ppm). Conversely, there are other geographic areas that are known to have extremely low calcium hardness levels – Seattle, Portland, Boise, and Atlanta – to name a few. (Extremely low would be below 50 ppm.) You can even find substantial fluctuations within the same area. Los Angeles County (roughly 4,000 square miles with 88 incorporated cities) covers the spectrum on Calcium Hardness levels from extremely high to extremely low.

What this means is that the same size pool (approx. 20,000 gallons) with a Calcium Hardness level of 40 ppm would need to add 26 lbs of Calcium Chloride added within the first 24 hours to bring the hardness level up to the recommended level of 150ppm. A 40,000 gallon pool would take 52 lbs. Yes, that's a lot of Calcium! How much Calcium Chloride do you think you sell to companies for start-ups now? Possibly not enough! Many customers can't imagine that they would ever need to add Calcium Chloride to a newly plastered pool's water, let alone 50 lbs of it. (*Side note: I was able to make these calculations very quickly and easily utilizing Table J of the Taylor Technologies K2005 test kit booklet.*)

A newly installed pool finish can be **damaged in as quickly as a few days** if the Calcium Hardness deficiencies are not addressed. This is because the water will attack the cement binder looking for calcium. Some of you might remember this concept from a previous article on JewelScapes and NPT Modifier/Azteca, as well as the JewelScapes Technical Bulletin from 2013 which states that low Calcium Hardness fill water will also attack the Azteca/NPT Modifier and render its “super” powers useless (much like Kryptonite does to Superman).

## Don't get yourself in hot water!

I've been asked this question many times by both homeowners and Pool Pros, “When can I turn on the pool heater?” It's a simple question with a not-so-simple answer that often has to be explained in great detail.

**Answer: The pool heater can be turned on when there is no longer plaster dust in the pool.**

If there is still plaster dust in the pool on day 7, remove it with a brush vac. Plaster dust is a by-product of the hydration process. As the cement hardens, it creates a product called calcium hydroxide. This calcium compound works its way through the cement matrix and appears on the surface of the pool finish as a white film or dusting. Once it's deposited on the surface, it's known as calcium carbonate. That's a lot of fancy words to say the same thing – plaster dust.

Exposed aggregate pool finishes tend to have less plaster dust than traditional pool finishes. The larger the aggregate, the less noticeable the appearance of plaster dust as the aggregates dominate what you see when you look into the pool. The lighter the color of the pool finish, the less plaster dust you will notice as well. This is one of the reasons why we have customers who will only install non-pigmented pool finishes.

Back to the point about plaster dust and pool heaters... Why does it matter if someone turns the pool heater on before all of the plaster dust is removed from the pool? *It actually has nothing to do with the pool finish and everything to do with the heater.* Chances are that turning on the heater prematurely will have a much more adverse effect on the heater – more specifically on the heat exchanger – than it does on the pool finish. With the heater running, there is a possibility of fusing the plaster dust to the heat exchanger which can dramatically cut down on its performance and service life.

## Knowledge is Power

Once you've reviewed both parts of this article along with the crucial NPC Start-Up Card, take the test and claim your prize (assuming you're among the first 10 to score 100%).

This article would not be possible without tremendous support from the following:

- Greg Garrett, Director of Technical Services for the National Plasterers Council (*The man, the myth, the legend. Special Thanks Greg!*)
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