

# New Plaster Guide



shooting plaster

This guide is for the pool owner  
who is plastering a pool  
which is already plastered or painted.



**AquaThority**  
POOLS & SPAS, LLC

*the clear choice in pool care*



founders Tim DeMirjian and Bob Nask

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## Introduction

The purpose of this New Plaster Guide is to inform and educate the pool owner who is plastering a pool which is already plastered or painted.

While a plaster pool surface is superior in finish and performance as compared to all other pool surfaces, it has its own set of rules which need to be understood and followed to ensure an enduring and serviceable lifespan which should exceed 10 years and, in many cases, 15 years or more.

The greatest influence on the welfare and lifespan of a plaster surface is water chemistry: concise instructions for such are presented later in the Day-by-Day Water Chemistry Instructions section of this guide. Additional water chemistry information is presented in our Water Chemistry Guide.

## Nature of Water

Essentially, pool water has basic chemistry needs: pH, alkalinity and calcium. Additionally, water has inherent elements of different origin: foreign, organic, environment. All of which need to be managed collectively.

When managed (balanced), the water is swimmer safe and plaster friendly. Conversely, if mismanaged (unbalanced) it will become aggressively destructive, causing swimmer irritation and plaster degradation: stain, scale, etch, etc.

A simpler explanation is that “water has an appetite” derived from its environs and natural occurring chemistry. When “fed what it hungers”, then water is content and passive. However, when “starved” it becomes aggressively destructive.

## Nature of Plaster

Made of an aggregate (e.g. marble dust) and Portland cement, plaster is hard, strong and durable. When plaster exhibits discoloring, stain, scale or wear, the culprit isn't the plaster: it's the water chemistry.

All forms of plaster are a 2-part combination of an aggregate and cement at a ratio of 2-to-1. White plaster, the most common, is white marble dust (aka: marcite) and white Portland cement.

- Marble dust mostly consists of ground, natural calcium carbonate (CaCO<sub>3</sub>)
- Portland cement is 66% limestone (calcareous materials) and 33% clay (argillaceous materials: silica, alumina, iron)

In essence, plaster is largely comprised of a variety of metals which need to be managed when interacting with a body of water. When these inherent elements (metals) of plaster become suspended in the water and fall-out of their solution (precipitate), they become a threat to the plaster.

Balanced water chemistry protects against such.

## Attributes of Plaster

While other finishes exist – e.g. paint, fiberglass, etc. – they all have their own nuances, inherent flaws and special needs. Although not perfect, decades of superior performance has proven that plaster's many attributes make it the best material for a swimming pool surface.

Plaster is:

- smooth to the touch of hands and feet
- durable with a long life expectancy
- resistant to impact and abrasion
- readily repaired, cleaned and maintained
- visually pleasing and inviting

That being said, plaster is not perfect because it is:

- compounded from raw and flawed mined minerals (cement and aggregates)
- hand-troweled over irregular and inconsistent surfaces (plaster or concrete)
- subject to the ill-effects of organic and inorganic material and water chemistry

Your new plaster can:

- be inconsistent and irregular in its application and finish
- look mottled, blotchy and streaky (pigmented plaster more so than white plaster)
- exhibit small cracks known as “check” or “craze” cracking (pose no threat to its life)
- be prone to stains and discolor caused by impurities (e.g. mica, metals, etc.)
- deteriorate due to mismanaged and unbalanced water chemistry

## Cracks

There are 2 types of cracks: superficial and structural. And there are 2 common causes of these cracks: shell expansion/contraction or movement, and/or plaster expansion/contraction (aka: craze cracking).

Most often, cracks are superficial (non-leaking) and readily repaired. Structural cracks can occur in the event the pool moves or shifts (aka: popping). A pool is vulnerable to such movement when empty: we remove the shell's hydrostatic plugs to prevent such.

At an additional cost of \$12 per linear foot, our pool masons repair superficial cracks by grinding-out and bonding them with an epoxy. Whereas, structural cracks require a much more extensive and expensive repair and would require additional expert analysis.

*NOTE: Any and all repaired cracks can recur or exhibit discoloring; there is no warranty for such.*

## Pop-Offs

A pop-off occurs when there is separation between the plaster and its underlying surface. A pop-off is discovered when the pool is empty and the plaster is inspected for hollow sounds/spots. Applying new plaster to an untended pop-off is flawed. Plaster pop-offs need to be chipped and removed.

While not common, pop-offs are more likely to occur with pools which have been plastered more than once. Typically, they are limited to several spots and will be chipped at no charge. However, if extensive chipping of expansive portions of plaster is required, then a cost of \$3.50 per square foot will be charged (for chipping, removing and discarding).

*NOTE: While unlikely, repaired pop-offs can display color variations; there is no warranty for such.*



craze cracking



mottled plaster



crack repair



pop-offs



water chemistry



water blast

## Plastering a Painted Pool

If you want to plaster your pool but your pool's surface is painted (plaster or concrete), then the paint needs to be removed: it's a barrier to the new plaster's adherence to the existing surface.

The two most common means of paint removal are sand blasting and water blasting with the latter being cleaner, faster, eco-friendly and, therefore, preferred. AquaThority will arrange, coordinate and supervise such.

## Plaster Prep

Proper preparation of the existing surface, to which the new material will be applied, is essential to achieving an optimal and enduring result. Upon emptying the pool and removing the hydrostatic plugs, we prepare the surface: we repair cracks, chip pop-offs, acid wash and bond coat.

In order to ensure a tight bond between the existing surface and the new plaster, we use what's commonly referred to as a bond coat: a one-part polymer-modified, cement-based coating. Acting as a bonding agent, it delivers a superb link between properly prepared surfaces and new plaster with consistent hydration (curing).

## Types of Plaster

All forms of pool plaster are a 2-part combination of cement and an aggregate. These are the four most common plasters.

**White Plaster - White plaster is: white marble dust (aka: marcite) and white Portland cement (ratio of 2-to-1).**

Applied at a thickness of approximately three-eighth-inch (.375"), white plaster is the most popular finish for pools and spas because of its smooth, durable and swimmer-friendly finish. It also gives pool water a bright blue appearance.

**Color Plaster - Color plaster is: white marble dust (aka: marcite) and white Portland cement (2-to-1), and pigment.**

Applied at a thickness of approximately three-eighth-inch (.375"), color plaster can enhance a pool's appearance. However, it's important to fully understand its unpredictable and irregular traits: extreme mottling; color unevenness; pigment deposits; and, varying degrees of streaking and fading.

**Quartz Plaster- Quartz plaster is: quartz aggregate and white Portland cement (2-to-1), and pigment, if desired.**

Applied at a thickness of approximately half-inch (.5"), quartz plaster sparkles with colored quartz, polymers and ceramics and, if desired, pigmentation. Quartz plaster can outperform traditional plasters with proper water chemistry: more resistant to stain, scale and wear. However, like color plaster, pigmented quartz plaster will exhibit inconsistencies in its finish.

**Pebble Plaster- Pebble plaster is: pebble aggregate and white Portland cement (ratio of 2-to-1), and pigment, if desired.**

Applied at a thickness of approximately three-quarter-inch (.75"), pebble plaster consists of smooth river pebbles of varying colors and sizes, and pigmentation, if desired. An inherently stronger aggregate, pebble plaster can outperform other plasters with proper water chemistry: more resistant to stain, scale and wear. However, similarly, pigmented pebble plaster will exhibit inconsistencies.



bond coat



white plaster



gray plaster



quartz plaster



pebble plaster

## Water Filling Instructions

Although relatively simple, there are important facts and procedures when filling a freshly plastered pool with water, including expediency. The faster the better: water protects and preserves plaster. So, filling the pool with water commences immediately following the plaster installation.

## Water Source

Typically, there are three sources for filling a pool.

### On-site well-water via garden hose:

The issues with on-site well-water via garden hose include capacity, rate of water flow, burden on pump motor, water metal content, and duration of pool fill (which can take many days).

### On-site public water via garden hose:

The issues with on-site public water via garden hose include rate of water flow and duration of pool fill which, depending upon the pool size and water pressure, can take 2 to 3 days or more.

### Trucked-in water:

The only issue with trucked-in water is cost which can be anywhere from \$.040 per gallon to \$.060 per gallon (\$800 to \$1,200 for a 20,000 gallon pool) which is dictated by the provider.

The favorable reason for trucked-in water is that the pool will be filled in hours and, subsequently, the new plaster will be protected from the ill-effects of exposure.

### Filling Instructions

**WARNING:** Do not stop or pause the flow of water when filling your newly plastered pool until the pool is full. Disruption in the water flow can create rings in the plaster at the point at which the water rests.

**NOTE:** At no time should any person or pet(s) be allowed in the pool during the filling process. Typically, swimming can resume 48 hours after the pool has been filled with water.

### Begin filling with a garden hose:

Upon the completion of the plaster installation, AquaThority will begin the pool filling process by securing a clean rag to the end of your garden hose and placing it in the deep-end of your pool with the valve wide-open. Your garden hose must remain open and flowing into the pool during the entire filling process, even if water is being trucked-in. Do not turn-off the water until the pool is full.

### Trucked-in water:

When water is being provided via truck, about 2' of water ideally should be in the deep-end (as a water cushion) prior to the arrival of the truck water. This cushion will be accomplished as described in the previous paragraph "begin filling with a garden hose". Your garden hose must remain open and flowing into the pool during the entire truck water filling process. Do not turn-off the water until the pool is full.

### Water level:

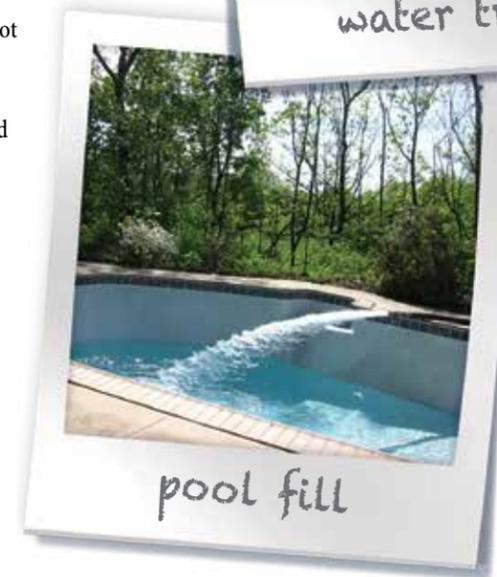
The water flow to the pool should not stop or pause until the water has risen above the tile line and, ideally, to the middle of the tile, filling the skimmer(s) in the process.

### Start-up of pool filtration system:

Once the pool is full, an AquaThority technician will return to start-up the filtration system and, on that occasion, add stain and scale (sequestering agent) as recommended by the National Plasterers Council. The filtration system should run continuously for the first 72 hours, at least.



water truck



pool fill

## Plaster Care Instructions

The greatest bearing on the welfare of a newly plastered pool's surface is the pool owner's diligence in brushing the plaster surface as presented in this guide as well as the regimented monitoring and adjusting of the pool's water chemistry.

*NOTE: Typically, swimming can resume 48 hours after the pool has been filled with water.*

### Critical Do's and Don'ts

This punch list of do's and don'ts and brushing instructions are paramount to the plaster curing and hydration process which lasts for about 28 days. It's during this 4 week period that your new plaster is most susceptible to staining, scaling and discoloration.

#### Critical do's:

1. daily brushing (details follow)
2. adjust water chemistry (details follow)
3. run the filtration system continuously for the first 72 hours, at least
4. always follow chemical product label instructions
5. swimming can resume 48 hours following plaster installation

#### Critical don'ts:

1. bare feet only (no shoes, flippers, etc.) for the first 2 weeks
2. no vacuuming or pool cleaners (e.g. Polaris) for the first 2 weeks
3. no dogs, pets or hard objects for the first 2 weeks
4. do not run the pool heater for the first 2 weeks
5. do not add salt for 28 days (for salt generator systems only)

### Brushing Your Newly Plastered Pool

Tools needed:

- fully functional telescopic pole
- good nylon bristle pool brush

*NOTE: Do not use a metal bristle brush.*

1. begin brushing after your pool is filled (filtration system should be running)
2. brush the walls and floor in a downward motion towards the bottom drain
3. brush 2 times a day for 2 weeks (frequent brushing will promote a smoother surface)
4. do not scrub, just brush lightly (should take no more than 20 to 30 minutes)
5. do not worry about the hard-to-get spots; brush those spots with a hand brush when swimming



## Day-by-Day Water Chemistry Instructions

### Filtration system

- filtration system must be running and remain running for the first 72 hours (3 days), at least
- thereafter, resume regular filtration schedule but run filter when brushing and adjusting chemistry
- we recommend 6:00 AM to 10:00 AM, and 6:00 PM to 10:00 PM: total of 8 hours in a 24 hour period

### Pool valves

- all valves for the pool drain(s) and skimmer(s) should be open along with the return valves for optimal circulation, distribution of chemicals and evenly balanced water

### Spa valves

- for a spa, the jets should be open but the drain should be closed
- we recommend that the spa water is turned-over daily for the first 2 weeks to ensure balanced water; open the spa drain valve to drain the spa, and then close the valve to refill the spa



## Day 1 (the day after pool fill)

- brush pool twice (morning and then afternoon or evening)
- adjust water chemistry

### #1: Alkalinity level

Test and adjust alkalinity

- test alkalinity and adjust to 80ppm to 100ppm
- proper alkalinity level helps stabilize pH

*NOTE: after 28 days, alkalinity range expands to 80ppm to 120ppm*

Low alkalinity will cause volatility with your pH level

- add alkalinity increaser (sodium bicarbonate) to raise alkalinity

High alkalinity will cause your pH level to be rigidly fixed and may cause scale and cloudiness

- add sodium bisulfate or muriatic acid to lower alkalinity

*NOTE: sodium bisulfate can discolor plaster where the granular rests; first, dilute granular in bucket of water (always follow product label instructions)*

### #2: pH level

Test and adjust pH

- test pH and adjust level to 7.2 to 7.6

Low pH means that your water is too acidic

- add pH increaser (sodium carbonate) to raise pH level

High pH means that your water needs acid

- add sodium bisulfate or muriatic acid to lower pH

*NOTE: Sodium bisulfate can discolor plaster where the granular rests; first, dilute granular in bucket of water (always follow product label instructions)*



## Day 2

- brush pool twice (morning and then afternoon or evening)
- adjust water chemistry

**#1: Alkalinity level - same instructions as Day 1**

**#2: pH level - same instructions as Day 1**

## Day 3

- brush pool twice (morning and then afternoon or evening)
- adjust water chemistry

**#1: Alkalinity level - same instructions as Day 1**

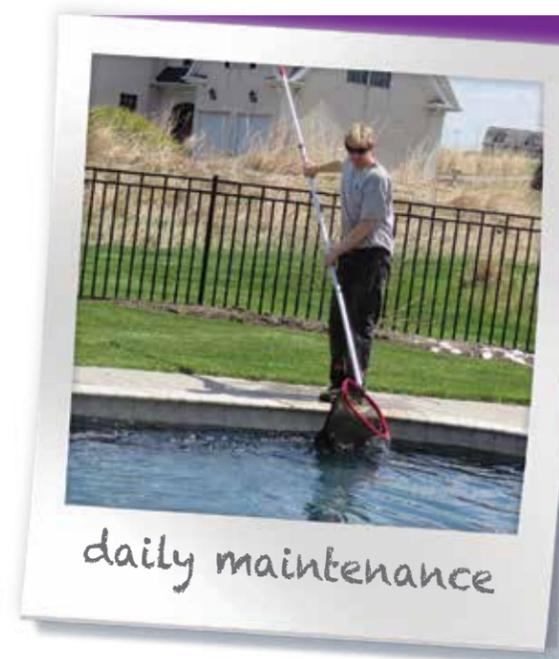
**#2: pH level - same instructions as Day 1**

**#3: Chlorine level**

**Test and adjust chlorine:**

- add chlorine (in tablet or granular) to achieve an ideal level of 1.5 to 2.0 ppm

*NOTE: granular chlorine can discolor plaster where the granular rests; first, dilute granular in bucket of water (always follow product label instructions)*



## Day 4

- brush pool twice (morning and then afternoon or evening)
- adjust water chemistry

**#1: Alkalinity level - same instructions as Day 1**

**#2: pH level - same instructions as Day 1**

**#3: Chlorine level - same instructions as Day 3**

**#4: Calcium hardness (aka: total hardness)**

**Test and adjust calcium hardness:**

- test calcium hardness and adjust to 200ppm

*NOTE: after 28 days, calcium range expands to 200ppm to 400ppm*

Low calcium water may leech calcium from the plaster and cause roughness

- add calcium chloride to increase calcium hardness

High calcium water may cause scale formation and cloudy water

- drain and replace some of the pool water to decrease calcium hardness

## Day 5

- brush pool twice (morning and then afternoon or evening)
- adjust water chemistry

**#1: Alkalinity level - same instructions as Day 1**

**#2: pH level - same instructions as Day 1**

**#3: Chlorine level - same instructions as Day 3**

**#4: Calcium hardness - same instructions as Day 4**

**#5: Cyanuric acid level**

Test and adjust cyanuric acid:

- cyanuric acid is a chlorine stabilizer and protects it from being destroyed by the sunlight
- test and adjust to 30ppm to 50ppm

Low cyanuric acid can cause the chlorine to be consumed by the sun's ultraviolet rays

- add cyanuric acid to achieve desired level

High cyanuric acid can bind the chlorine and render it ineffective

- drain and replace some of the pool water to decrease cyanuric acid

## Day 6 through Day 28

**#1: Alkalinity level - same instructions as Day 1**

**#2: pH level - same instructions as Day 1**

**#3: Chlorine level - same instructions as Day 3**

**#4: Calcium hardness - same instructions as Day 4**

**#5: Cyanuric acid level - same instructions as Day 5**

*NOTE: you may resume vacuuming and heating your pool after 2 weeks.*



**Trust AquaThORITY with your pool  
and enjoy peace of mind.**

- Better Business Bureau A+ rated
- Angie's List Super Service award
- National Plasterers Council member
- Home Advisor Pro recommended
- PA Registered Contractor: PA083523



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