

START-UP PROCEDURES



NATIONAL PLASTERERS COUNCIL

THE FOREMOST AUTHORITY
IN THE CEMENTITIOUS
INTERIOR POOL FINISHING INDUSTRY

www.npconline.org 847-416-7272

RECOMMENDATIONS

The pool will start to hydrate immediately after mixing, with the majority of hydration taking place within the first 28 days. This critical time period is when a finish is most susceptible to staining, scaling and discoloration.

Proper start-up procedures including timely brushing and constant monitoring and adjusting of the pool water is mandatory. The following recommended start-up method is based on procedures shown to produce the best aesthetic results.

Due to unique local water conditions and environmental factors, parts of these recommended start-up procedures may need to be modified to protect the pool finish.

For example: filling the pool with extremely low calcium hardness, low pH or low total alkalinity levels may necessitate changes to these procedures. Brushing and monitored chemical² adjustments will be mandatory by the homeowner or a trained pool technician during the service life of any pool surface.

ALWAYS ADD A CHEMICAL TO WATER, NEVER WATER TO THE CHEMICAL.

POOL FILLING DAY PREPARATION STEPS

1. Make sure the filtration equipment is operational.
2. Remove all floor return heads and directional eyeballs (if appropriate and recommended in your geographical area.)
3. Based on temperature and type of finish, fill the pool to the middle of the skimmer or specified water level without interruption as rapidly as possible with clean potable water to help prevent a bowl ring. Place a clean cloth on the end of the hose and then position the hose in the deepest area of the pool to prevent damage to the surface material. If a water truck is required, 24 inches (60 cm) of water should be placed at the deepest area for a water cushion. Wheeled devices should not be used in the pool until after 28 days.
4. At no time should any person or pets be allowed in the pool during the fill. Do not allow any external sources of water to enter the pool to help prevent streaking. It is recommended that you do not swim in the pool until the water is properly balanced and sanitized.
5. Test fill water for pH, alkalinity, calcium hardness and metals. Record test results.
6. Start the filtration system immediately when the pool is full to the middle of the skimmer or specified water level.

THE 1ST DAY

It's vital to follow these steps in order prior to proceeding to the next step

1. Test fill water for pH, alkalinity, calcium hardness and metals. Record test results.
2. High alkalinity should be adjusted to 80 ppm¹ using pre-diluted Muriatic Acid (31-33% Hydrochloric acid). Always pre-dilute the acid by adding it to a five gallon (19 L) bucket of pool water².
3. Low alkalinity should be adjusted to 80 ppm¹ using sodium bicarbonate (baking soda¹.)
4. pH should be reduced to 7.2 to 7.6 adding pre-diluted² Muriatic Acid if the alkalinity is already 80-100 ppm¹.

5. Brush the entire pool surface thoroughly at least twice daily to remove all plaster dust. Wheeled devices should not be used in the pool until after 28 days.
6. Although optional, it is highly recommended to pre-dilute and add a quality sequestering agent using the recommended initial start-up dosage and then the recommended maintenance dosage per the sequestering agent's manufacturer.²
7. Operate filtration system continuously for a minimum of 72 hours.
8. DO NOT add chlorine for 48 hours. DO NOT turn on pool heater until there is no plaster dust in the pool.

THE 2ND DAY

Brush the pool

1. Test pH, Alkalinity and Calcium Hardness and repeat steps of 1st day except for Step 6.
2. Once the alkalinity is adjusted to 80ppm and the pH is adjusted to 7.2 to 7.6, then adjust calcium hardness levels to a minimum of 150 ppm. (CAUTION: Adjustments requiring more than 20 lb. of CaCl² should be pre-diluted and added in 10 lb. increments – morning and afternoon.)

THE 3RD DAY

1. Test pH, Alkalinity and Calcium Hardness and repeat 1st day, Steps 1 through 5.
2. Pre-diluted² chlorine may now be added to achieve 1.5 to 3 ppm¹. NO SALT SHOULD BE ADDED FOR 28 DAYS.
3. Brush the entire pool surface thoroughly at least twice daily to remove all plaster dust.

THE 4TH – 28TH DAY

1. Test pH, Carbonate Alkalinity and Calcium Hardness and repeat 1st day Steps 1 through 5 every day for 14 days to help prevent the scaling of the pool surface.
2. On the 7th day, if there is any plaster dust remaining – remove it using a brush pool vacuum.
3. After the 4th Day, Calcium levels should be adjusted slowly over the 28 day period not to exceed 200 ppm¹
4. After the 4th Day, Adjust Cyanuric acid levels to 30 to 50 ppm¹ based on the primary sanitizer of the pool (pre-dissolve² and add through the skimmer).

SOME OF THE BENEFITS OF MEMBERSHIP

- ✓ Full-time Technical Advisor and Pool Inspection Program for NPC members and Consumers
- ✓ Ongoing research, such as Evaporation Study at Cal Poly to address the Drought, or protocols being developed with NESPA
- ✓ NPC's Technical Manual outlining sound technical practices
- ✓ Annual National Conference for networking and education
- ✓ Start-up Technician Certification and Recertification Program
- ✓ NPC Technical Bulletins & Best Practices
- ✓ Rey Perales Memorial Scholarship program
- ✓ Use of the NPC name and logo – being able to place trade affiliation on your business cards helps promote your profession, signaling to customers not only your active participation in the development of the industry, but also your interest in industry best practices
- ✓ Networking – Meet great like-minded people, exchange ideas – A powerful benefit of making connections with your peers from other parts of the country is the opportunity to share best operational practices, experience with new technologies or approaches to marketing
- ✓ See what opportunities or challenges are in the industry

CHEMISTRY & MAINTENANCE

Balanced water chemistry is as critical during the off-season months as it is in season. Water may become aggressive because of rain, snow, and fill water as with the regular use of acid to control pH. Adjust your pH and Carbonate Alkalinity¹ frequently; monitor calcium hardness and Cyanuric acid monthly.

The Langelier Saturation Index (LSI) must be maintained between 0.0 and +0.3 for day-to-day maintenance after the initial start-up procedure has been completed. This will help to reduce the likelihood of problems with the pool surface. Disregarding these LSI parameters promotes leaching, etching and discoloration on the negative (-) side and scaling and discoloration on the positive(+) side.

DAILY WATER CHEMISTRY AFTER 28 DAYS

Maintain the water chemistry using the Langelier Saturation Index (LSI) between 0.0 and +0.3

- Free Chlorine = 1 to 3 ppm
- Total Chlorine = 1 to 3 ppm
- Sequestering Agent as per Manufacturer's directions
- pH = 7.2 to 7.6
- Carbonate Alkalinity = 80 to 120 ppm¹
- Calcium hardness = 200 to 400 ppm
- Cyanuric acid= 30 to 50 ppm
- TDS = 300 to 1800 ppm (Non-salt pools)
- Salt Level = according to the manufacturer recommendations (Salt chlorination ONLY)

$$\text{pH} + \text{Total Alkalinity Factor} + \text{Calcium Hardness Factor} + \text{Temperature Factor} - \text{TDS Factor} = \text{Langelier Saturation Index (LSI)}$$

Deterioration, discoloration and scaling as a result of the premature or improper use of chemicals and use of chemical feeders are the responsibility of the equipment installer and operator. Feeders other than Oxidation Reduction Potential (ORP) types and pH controllers should not be placed in operation for a minimum of 28 after the start-up.

Failure to follow the manufacturer's and/or applicator instructions and to control the LSI may cause deleterious effects, which are not the result of improper workmanship or a manufacturer's defect.

LSI CALCULATOR			
TA ¹ ppm	CH ppm	Temp F° (C)	Total Dissolved Solids (TDS) ppm
FACTOR	FACTOR	FACTOR	FACTOR
5 = 0.7	75 = 1.5	32 (0°C) = 0.0	Up to 1000 = 12.10
25 = 1.4	100 = 1.6	37 (3°C) = 0.1	1000 = 12.19
50 = 1.7	150 = 1.8	46 (8°C) = 0.2	2000 = 12.29
75 = 1.9	200 = 1.9	53 (12°C) = 0.3	3000 = 12.35
100 = 2.0	300 = 2.1	60 (16°C) = 0.4	4000 = 12.41
125 = 2.1	400 = 2.2	66 (19°C) = 0.5	5000 = 12.44
150 = 2.2	800 = 2.5	76 (24°C) = 0.6	
200 = 2.3	1000 = 2.6	84 (29°C) = 0.7	
300 = 2.5		94 (34°C) = 0.8	
400 = 2.6		105 (41°C) = 0.9	

For example if:
Pool Water Chemistry

pH 7.8
TA 125¹
CH 300
TF 90° F (32°C)
TDS 950

CALCULATED LSI*

pH	7.8
TA Factor ¹	2.1
CH Factor	2.1
Temp Factor	.8
TOTAL	+12.8
Subtract TDS Factor	-12.1
LSI =	+0.7 SCALING

*Use the closest factor to the chemistry reading.

Target calculated 0.0 to +0.3

A calculated (+) positive LSI has scaling tendencies.

A calculated LSI of 0.0 is considered balanced.

A calculated (-) negative LSI has corrosive tendencies.

CAUTION: Research has shown that Cyanuric acid levels of 100 ppm (mg/l) and above may cause permanent deterioration to the pool surface. Excessively high calcium hardness and Cyanuric acid levels should be diluted. DILUTION IS THE LOW COST SOLUTION.

BECOME AN NPC CERTIFIED START-UP TECHNICIAN

- ✓ Learn the correct way to properly start-up a swimming pool using the NPC's method
- ✓ Earn a new certification for your resume to promote your company
- ✓ Learn how starting up swimming pools can significantly increase your income
- ✓ Learn about possible problems during the start-up process and how to fix them
- ✓ Have the competitive edge with your competition in your market area
- ✓ Have new resources to be able to solve issues as they arise in the field

These NPC procedures are provided compliments of:



SWIMMING POOL

DAILY WATER