

Let Riverside Chemical Help Solve Your Pool Problems

The following Pool Chemicals are available from Riverside Chemical Company:

- Chlorinating Agents:** "Liquid Chlorine" (Sodium Hypochlorite, i.e., concentrated laundry bleach)
 "Shock" (same thing as liquid chlorine, but you just use more of it to achieve a "Shock.")
- Salt:** Purex Salt (Sodium Chloride or table salt (non-iodine) for Salt Water Chlorine Generators or SWG)
- Chlorine Neutralizer:** Hydrogen Peroxide or Sodium Thiosulfate (Removes free chlorine to reverse shock – only use if really needed.)
- pH Increase:** Soda Ash (Sodium Carbonate; also increases Alkalinity), or Caustic Soda (increased hazard) and Sodium Tetraborate, Pentahydrate (Borax) may be used to raise the pH without adding Alkalinity.
- pH Decrease:** Muriatic Acid (NOTE: increased hazard), or Sodium Bisulfate (dry acid, safer but more expensive)
- Increase Alkalinity:** Sodium Bicarbonate (baking soda; acts as a pH stabilizer), or Sodium Carbonate (also increases pH)
- Increase Hardness:** Calcium Chloride, Flake (generally only needed with in-ground gunite pools)
- Floccing Agent:** Alum (Aluminum Sulfate)
- Filter Media:** "DE" Diatomaceous Earth (Celatom FW 60)

Recommended: AquaChek® test strips (now available at Riverside) to measure: pH, Free Chlorine, Alkalinity & Stabilizer.

Problem	Possible Cause(s)	Remedy Suggestions
pH outside desired range of 7.2 – 7.8	1) Heavy rainfall (acid rain) may lower the pH. 2) Routine chlorination or other contaminants may raise pH.	1) Check pH ¹ and increase as needed with Soda Ash or Borax. Caustic Soda may be used with extreme caution. 2) Check pH ¹ and decrease as needed with Muriatic Acid (used with extreme caution) or Sodium Bisulfate.
Cloudy water	1) Poor water filtration 2) Heavy rainfall 3) Water unbalanced 4) Too much Alum or poor flocculation of Alum 5) Early algae growth	1) For sand filters, thoroughly backwash; Sand may be channeling or is calcified. Redistribute sand. Use a filter cleaner if needed. <ul style="list-style-type: none"> • Replace filter aid in DE filters and check directions with the filter manufacturer. • Clean or replace cartridge filter. Look for tears in the filter. 2) Check pH ¹ & Chlorine ³ level, adjust as needed. 3) Check pH ¹ , Total Alkalinity ² & Total Hardness ⁶ , adjust as needed. 4) If Alum ⁷ has just been added, check the pH and adjust as needed. Alum floc will settle to bottom and should be vacuumed to waste. 5) If after adjusting the pH you see a rapid rise occur after 2 - 4 hrs, this may be the start of algae growth. Adjust pH again & Shock ⁴
Green or slimy pool walls	1) Algae growth due to low residual chlorine. May be due to high pool use or heavy rainfall. 2) Inadequate Free Chlorine 3) Chlorine stabilizer level is too high	1) Check pH ¹ and adjust if necessary. Shock ⁴ . <u>If chlorine doesn't work</u> , add a double amount of algacide. Thoroughly vacuum pool and walls. Be sure to maintain with daily chlorination. 2) Compare "Free Chlorine" to "Total Chlorine." Shock ⁴ pool if Combined Chlorine ³ is >1 ppm. 3) Some solid chlorinators contain a stabilizer ⁵ to minimize chlorine losses, but if too high, they can tie-up your chlorine in the pool and prevent it from doing its job. Test with AquaChek type test strips and do a partial water change as needed.
Yellow or pink forming on pool walls	Algae growth due to low residual chlorine. May be poor circulation.	Check pH ¹ and adjust if necessary, then Shock ⁴ . <u>If chlorine doesn't work</u> , use an algacide specific to these algae. Thoroughly vacuum pool.
Water is dark (black, brown/red), or staining of pool walls	Dissolved metals (iron, copper), a source of mud, or black algae.	Check pH ¹ and Total Alkalinity ² , adjust if necessary. Shock ⁴ , Flocculate ⁷ , or Chelate ⁸ and allow to settle, vacuum to waste, and then filter normally.
Rapid pressure buildup in filter after backwash	Clogged filter or sand elements	Longer backwash period. If filter has sight-glass, check clarity of backwash and run until clear. Use a filter cleaner periodically to maintain filter at peak efficiency.
Filter sand in pool	1) Filter sand "channeling" 2) Cracked filter	1) Treat filter sand with a filter cleaner. 2) Contact filter manufacturer.

Eye or skin irritation while swimming	1) Improper pH or alkali control 2) Chloramines (combined chlorines)	1) Check pH ¹ & Total Alkalinity ² , adjust as needed. 2) Compare "Free Chlorine" to "Total Chlorine." Shock ⁴ pool if Combined Chlorine ³ is >1 ppm.
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Note: 1 ppm = 1 part per million, or 0.0001%

- 1) **pH** – This is a measure of acidity (low) or alkalinity (high), with 7.0 being neutral. The pH of your water is the first thing to adjust when opening your pool. It should then be checked at least twice per week and maintained between 7.2 – 7.8, with an ideal range of 7.4 – 7.6. If the pH is low, you will not be able to keep chlorine in the water! If you are starting with a pH of about 7.0, add ½ lb. of Soda Ash per 10,000 gal. water to bring it into the desired range. Borax may also be used to raise the pH. It is claimed that a borate level of >50 ppm will also inhibit algae and decrease eye irritation. (This author has no firsthand experience with this.) To lower the pH from around 8.0 into the desired range, add 1 pint of Muriatic Acid or 1 lb. of Sodium Bisulfate per 10,000 gal. water. (Note: This will also lower Alkalinity reading.) When raising or lowering the pH, add half of what you think you need, allow the water to circulate for at least 2 hours, and then retest.
- 2) **Total Alkalinity** – This is a measure of alkaline substances (primarily dissolved carbonates) in your water. They help to buffer your water against sudden changes in pH and should be checked when opening the pool and once a month thereafter. The desired range is 80 – 120 ppm for plaster pools and 125 – 150 ppm for vinyl, fiberglass and painted pools. If the level is low, it may be increased 10 ppm with the addition of about 1.5 lb. Sodium Bicarbonate per 10,000 gal. water. If you also need to raise the pH, start with sodium carbonate which will do both. To decrease Alkalinity by 10 ppm, add 2 fluid oz. muriatic acid or 2.5 oz. Sodium Bisulfate per 1,000 gal. Note: This will also decrease the pH. Home pool applications should never add more than 1 quart of muriatic acid per 10,000 gal. per day.
- 3) **Chlorine Level** – The purpose of chlorine in a pool is to disinfect or sanitize the water preventing the growth of organisms. It also acts to oxidize or destroy ammonia and nitrogen containing contaminants, and swimmer waste. The ideal range for "Free Chlorine" is 1 – 3 ppm (the EPA calls for 0.6 – 1 ppm) as determined with an AquaChek type test strip. Twice per week this value should be compared to the "Total Chlorine" (which is read by a normal yellow dropper type color test kit.) The difference between these readings is the "Combined Chlorine" (or chlorine that has already been used but is still present in the pool) and the pool should be "Shocked" if it is >1 ppm.

NOTE: Chlorination is most effective when added in the evening when the sun is going down and after swimming is complete. The addition of 1 oz. of "Liquid Chlorine" will introduce about 1 ppm chlorine in 1,000 gal. of water (or 1 pint in 15,000 gallons.) The "Granular Chlorine" will require ¼ oz. per 1,000 gal.

- 4) **Shock** – This is merely a superchlorination of the pool water. Add 1 gal. of Liquid Chlorine (same stuff you use to maintain the pool) or 20 – 30 oz. (~1½ lb.) of "Granular Chlorine" (not preferred) per 10,000 gal. of pool water. Allow it to work for at least 4 hours (preferably 24 hours.) Shocking is recommended once a month, after heavy pool use, or if the "Combined Chlorine" exceeds 1 ppm. If you are shocking the pool due to the growth of algae, you may want to use a slightly higher concentration of chlorine.

NOTE: Do not allow swimmers in the pool after a shock treatment. If swimming is desired prior to the chlorine level dropping on its own to the normal range of 1 – 3 ppm, this depletion may be accelerated by the addition of approximately 24 fl. oz. of 32% Hydrogen Peroxide or 0.7 lb. of Sodium Thiosulfate (Chlorine Neutralizers) for each gallon of Liquid Chlorine that was added. Add the Chlorine Neutralizer slowly with the approximate end point of 3 – 5 ppm free chlorine. Once complete, check the pH (which may have dropped) and adjust as necessary.
- 5) **Chlorine Stabilizer** (optional) – This is generally a form of cyanuric acid found in some solid chlorine sources or purchased separately from a pool store. It may be added to your pool to help minimize the needless loss of chlorine from your water when exposed to the sun's ultraviolet rays. The ideal stabilizer range is 30 – 50 ppm. Lower levels won't hurt you, but avoid higher levels as it can interfere with the chlorine efficiency resulting in your pool turning green even though tests show the Free Chlorine level to be ideal.
- 6) **Total Hardness** – This refers to the amount of calcium and magnesium in your pool water. If it is too high, scale can form causing pool filters and plumbing to clog and water to appear cloudy. If Hardness is too low, it will slowly dissolve plaster walls and corrode metal fixtures. The desired Total Hardness should be maintained in the range of 200 – 500 ppm. As needed, add 2 oz. of Calcium Chloride per 1,000 gal. water to increase hardness by 10 ppm. Unless your tap water is hard, fresh water may be required to decrease the Total Hardness in your pool.
- 7) **Flocculate** – Use Alum to help clarify cloudy pool water when operating a sand filtration system. This material is acidic, so you first need to raise the pH to 7.8 – 8.2. Next add 3 – 4 oz. of Alum per 1,000 gal. of water (about 3 to 4 lb. per typical 15,000 gal. pool.) Recirculate the pool water for 2 to 4 hours to distribute. Turn off the pump and do not swim in the pool. Allow pool water to settle for 24 to 48 hours. Fine white solids should "Floc" and drop to bottom. With minimal disturbance, carefully vacuum to waste. Do NOT try to send this water back through the filter. Repeat if necessary. At the end, adjust the pH if necessary.
- 8) **Chelate** – This is the act of tying-up the dissolved metals with a chelating agent, which then allows them to be removed from the water. These agents are not available from Riverside Chemical.

Warning: Never add chemicals when swimmers are in the water! Never mix or store Acids directly with Liquid Chlorine!

Important: The information provided, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our knowledge. No warranty or guarantee is made regarding performance, stability or otherwise. This information is not intended to be all-inclusive as the manner and condition of use will vary.