

Salt Water Pools

Popularized in the United States during the 1980's, salt water pools have continued to surge in popularity, with millions of salt pool systems now in operation.

A salt water pool is not a chlorine-free pool. Salt water pools create their own chlorine by passing slightly salty water through two electrically charged metal plates, called the Salt Cell.

Through electrolysis, Salt (NaCl) and water (H₂O), are converted into Chlorine (Cl₂), Hydrogen (H₂) and Sodium Hydroxide (NaOH), as the water passes through the energized salt cell.

When the chlorine molecule (hypochlorous acid, the same chemical produced by chlorine tablets and shock) is used up, the salt is converted back to NaCl, and the process can start again.

A salt water pool is not better than a chlorine pool – because it is a chlorine pool. [Salt Pools](#) create chlorine to kill bacteria and germs, the same chemical produced by tablets, liquid or granular chlorine.



Benefits of a Salt Water Pool

Salt water pool owners love the soft and silky feel of the water, due to the 3000 ppm of dissolved salt in the pool. 3500 ppm is point at which human taste buds can sense salt, so you may not taste it, but can feel the difference.

Salt water pools can often be easier to manage, as many salt system owners report reduced chloramine formation; combined chlorine molecules that smell bad and are eye irritants. Indeed, most users of salt systems report much less chlorine smell, in the water, or on their skin after swimming, and no more 'red-eye' swimmers. Some users also claim to have a more stable pH and alkalinity, with less frequent adjustment needed.

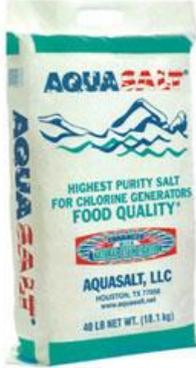
Salt water pools may be safer to operate, in that you have less contact with chlorine products. In theory, you no longer have to buy, store, transport and handle chlorine products ever again! In practice however, many salt pool owners use pool shock for opening, closing or periodic shock treatments.

Pool tablets or shock can also be very handy in case of pump or filter problems, as chlorine is not produced unless water is flowing through the salt cell. They also can be needed during cold weather, as chlorine is not produced when water temperatures are below 60° F.

Salt Water Pools Vs. Ocean Water

In comparison to ocean salt water, salt water pools are over 10-times less salty than the ocean, which has around 35,000 ppm of salinity. There are ocean-water pools that do exist, but they require special surfaces and equipment that won't corrode in the presence of such high salt levels. And they also still require chlorine. A marine environment is much different than pool water, with biological processes helping to keep the water [mostly] clean and clear. Salt water pools have only about 3000 ppm of salt dissolved in the water, and use electrolysis to convert the salty water into pure hypochlorous acid, or Free Available Chlorine.

Setting Up a Salt Water Pool



Setting up a salt water pool is more than just pouring salt in the pool. Add salt without using a chlorine generator, and all you have is salty pool water.

But essentially you do just pour salt into the pool, a lot of salt. How much salt to add to the pool? To reach the initial salt level recommended by the salt system manufacturer (usually 2400-3200 ppm), you will need to add about 200 lbs of pure [pool grade salt](#) (NaCl), per 10,000 gallons of water. Salt stays in the water, you only need annual boosters, to replace salt lost to backwashing or splashout.

Installing a salt chlorine generator is also fairly straight forward. Most inground salt systems have a wall mounted control box plugged into an electric outlet and an inline salt cell, plumbed into the return line. The control panel allows you to dial-in the desired amount of chlorine output, with indicators for water flow, temperature, and salt level. Salt chlorine generators for above ground pools often hang on the pool wall, or attach to the pool return for an even easier installation.

Turn on the [chlorine generator](#), and if the water temperature is above 60° F, and water flow is sufficient, low voltage energy is applied to the salt cell, which begins to produce chlorine, until the chlorine output level is satisfied. Chlorine generators will turn themselves on and off as needed, to create a consistent chlorine level, but you still need to test your pool chlorine level, and adjust the output as needed.

Maintaining a Salt Water Pool



There is very little difference in the day to day maintenance – between salt pools and chlorine-tablet pools. The biggest difference is that you're not opening a smelly chlorine bucket every week to fill the chemical feeder or floater. You still need to test and adjust your water balance and chlorine levels, you still need to use chlorine stabilizer, and may need other helper chemicals to maintain water quality.

There are some additional tasks that come with a salt water pool however. The energized plates of the salt cell attract calcium scale, which deposit upon the metal surfaces, reducing chlorine output, and eventually damaging the cell. Salt cells need to be cleaned regularly in a mild acid solution, to dissolve the scale. Advanced inground salt systems are self-cleaning, accomplished by reversing the polarity to the salt cell, and sloughing off the scale, which is carried away by the water.

Salt is a corrosive mineral, and can damage soft travertine stone or stainless steel surfaces used on pool ladders and pool lights. Over time, salty water dragged off by swimmers can pit or erode soft stone surfaces. Sealing surfaces around the pool, with regular cleaning for areas with low rainfall, can help protect soft surfaces from salt deposits. Pool ladders and lights and other stainless steel items in the pool can also lose their luster as salt slowly oxidizes the steel. Sacrificial [zinc anodes](#) can be used in the

pool or skimmer, to draw attention away from other metal surfaces. Salt can also damage soft rubbers used in pump seals and o-rings. Salt-resistant pump shaft [seals](#) are available, and o-rings can be protected with [pool lube](#).

In addition to testing your chlorine, pH, alkalinity, calcium and cyanuric acid levels regularly, salt water pools should be tested with [salt test strips](#) throughout the pool season. Salt does not evaporate, but is diluted by rain and fill water added to the pool, or when lowering the water level for winterization.

Converting to a Salt Water Pool

To convert a traditional chlorine pool to a salt water pool, you don't need to drain the pool, or do anything special. Besides normal and good water balance, all you need for a salt water pool is a chlorine generator and enough pool salt to raise the level to the salt system manufacturer's recommendation.

You will still need to maintain good water balance on a salt water pool. Your pool pH, Alkalinity and Calcium Hardness must be maintained by testing and adjusting the levels as needed, just as with a traditional chlorine pool. You will also still need to use cyanuric acid, or chlorine stabilizer, to control UV chlorine degradation, and prevent overworking your salt cell.

Cost of a Salt Water Pool

Salt pools need hundreds of pounds of salt, which is fairly inexpensive when purchased locally; the main cost of a salt water pool is for the equipment, including the controller, sensors and salt cell.



The cost of a chlorine generator varies by the size of the unit. Small [chlorine generators for above ground pools](#) cost between \$250-\$550, and [inground chlorine generators](#) are priced from \$550-\$1250.

More expensive salt chlorine generators have more features, such as the ability to super chlorinate or shock the pool. Some have a self-cleaning salt cell, capable of reverse polarity and LED display of salt level, water temperature and diagnostic lights for required service.

Over a 3-5 year lifespan, the salt cell will lose the metallic coatings on the metal plates, chlorine output diminishes, and eventually needs to be replaced. [Replacement salt cells](#) can be costly, up to half or more of the cost of the entire salt system.

Annual booster additions of [pool salt](#) are usually required, but only to replace salt lost from backwashing, splashout or lowering the water for winter. If you fully drain the pool for maintenance, you will need to replace all of the pool salt.

Over a ten-year timespan, the cost of a salt water pool vs. the cost of a chlorine-tablet pool, can be surprisingly close. In other words, you won't save a lot of money with a salt water pool. The cost of the salt equipment offsets the chlorine cost savings fairly closely.

Chemicals for a Salt Water Pool

As previously mentioned, saltwater pools are not chlorine-free, nor are they chemical-free. A salt water pool is a chlorinated pool, with an alternative delivery system. As such, you will still need other pool chemicals when using a salt chlorine generator.

Sanitizers: Most of your sanitation will be taken care of with your chlorine generator. It can be helpful however, to keep a small supply of [chlorine tabs](#) or granular chlorine, in the event of problems with the pump, filter, plumbing or the salt cell itself. Salt pool owners also often use granular [pool shock](#) for oxidation, algae removal or super-chlorination. Many chlorine generators have a 'Shock' feature, but they are slow to act, and using it creates a heavy demand on the salt cell, and may shorten the lifespan.

Balancers: Just like any pool, you need to pay close attention to pH, Alkalinity, Calcium Hardness and Cyanuric Acid (stabilizer) levels in the pool. Chlorine-tablet treated pools tend to gravitate towards the low end of the pH and Alkalinity scale, while salt water pools tend to slowly rise in pH level, requiring [pH reducer](#). Salt water pools are most stable with a pH of 7.6, and Alkalinity of 70-80 ppm. A [stabilizer](#) level of 50-80 ppm is recommended by most salt system manufacturers. High calcium hardness levels have no effect on salt water pools, but a level of 180-200 ppm may result in less scale on the salt cell plates.

Other: Algaecides and Clarifiers may be needed on occasion, as with any other pool. [Algaecides](#) are great helper chemicals for chlorine, as it dissolves protective layers on algae, allowing chlorine to penetrate deep into the nucleus. [Clarifiers](#) are helpful for pool filters that are undersized or underperforming or not running long enough each day, or after a spring start-up or algae clean-up.

Water Testing in a Salt Water Pool



Just like any other pool, you will need a good [test kit](#) to monitor chlorine and water balance levels. Most importantly, the pH and chlorine level should be tested at least once per week. Salt chlorine generators can be set to a certain output level, but temperature and weather changes can use more chlorine than is created, so you must test the pool chlorine level in a salt water pool, and adjust the output as needed.

In addition to testing a salt water pool for pH, Alkalinity, Calcium Hardness and Cyanuric Acid, you also now need to test the salinity level, or the amount of salt in the pool, in parts per million, or ppm.

Many inground units monitor salt level and some display the salt level or have 'Low Salt' indicator lights, but testing with [salt test strips](#) is still a good idea, to calibrate or double-check the salt sensor.