

Pool Chlorine and Bromine - Learn About Pool Chemicals

Proper water sanitization is absolutely necessary for the maintenance of a clean and healthy swimming pool. While there are a variety of different pool sanitizers available for pool owners to use, the two most commonly used sanitizing chemicals are [chlorine and bromine](#). While both of these chemicals can provide excellent pool sanitization, it's important to understand the differences between the two options before deciding which pool sanitizer to use in your swimming pool.

General Information



When chlorine or bromine is added to pool water, a reaction takes place which results in the production of the chemical's active disinfectant form. For [chlorine](#), the active disinfectant form is hypochlorous acid (HOCL) while the active form of [bromine](#) is hypobromous acid (HOBr). The reason why these chemicals are used as swimming pool sanitizers is because they are able to kill bacteria and other contaminants which can cause dirty, cloudy water and can also pose a risk to swimmer health.

How They Work

Hypochlorous acid, chlorine's active form, kills bacteria and other pathogens by attacking the cell walls and internal structures of microorganisms. This process is known as oxidization and renders the microorganisms harmless. As the active chlorine molecules combine with bacteria and other microorganisms, those chlorine molecules become inactive. Over time, chlorine molecules in the pool water will also combine with ammonia and nitrogen, resulting in the formation of chloramines. Since chloramines and inactive chlorine molecules do not assist in the water sanitization process, regular addition of chlorine to a swimming pool is necessary in order to maintain clean water.



Also, [pool shock](#) is necessary to remove chloramines as they build up in the water. Otherwise, accumulating chloramines can produce a strong, unpleasant odor. They can also cause skin and eye irritation. Another important fact to remember is that chlorine is very pH dependent. This means that the effectiveness of chlorine is dictated by the pool water's pH level, which must be maintained between 7.4 and 7.6 in order for proper chlorine sanitization to take place.

Bromine in its active form, hypobromous acid, kills and deactivates pathogens in the same general way that chlorine does. Also similar to chlorine, bromine combines with nitrogen and ammonia to form bromamines. However, unlike chloramines which are very poor sanitizers, bromamines are very effective sanitizers. This means that bromine does not need to be added to swimming pools as frequently as chlorine. While occasional pool shocking will be required to prevent water turbidity caused by the build up of bromamines, this step will not be required as frequently as with chlorine. Another difference between chlorine and bromine is the fact that bromine is effective over a wider pH range. In fact, bromine will effectively kill contaminants when the pH level is anywhere between 7.0 and 8.0.

Bather Experience

When swimming pool chlorine is maintained at the correct levels, its odor is practically undetectable and it generally will not cause any irritation. However, improper pool maintenance and improper pool

shocking can lead to the accumulation of chloramines. As already mentioned, chloramines do have a strong and unpleasant smell and can cause significant skin and eye irritation. Also, some swimmers are allergic or sensitive to chlorine and therefore must swim in pools which use an alternative sanitizer such as bromine. In contrast to chloramines, bromamines have a far less pungent odor and do not cause skin or eye irritation.

Ease of Use



When it comes to using these swimming pool chemicals, many pool owners find chlorine generally easier to use. [Which chlorine type is best for you?](#) Chlorine is available in a variety of forms, such as [sticks](#), [3" tablets](#), [1" tablets](#) and [granules](#) which can simply be added manually to pool water as it dissolves very quickly. Chlorine levels are quite easy to control when the water is shocked regularly and when pH and alkalinity levels are maintained within ideal ranges. Cyanuric acid, or [stabilizer](#) should be added to chlorine pools as needed, to maintain the level between 30ppm-50ppm. Stabilizer helps reduce the breakdown of chlorine due to sunlight.

Bromine use, on the other hand, can be somewhat more complicated. To begin with, bromine is a very slow dissolving chemical and must be added to pool water through the use of an automatic chemical feeder. Because the use of a chlorine product may be necessary to maintain the free bromine level, pool owners may require professional support when first starting to use bromine as a pool sanitizer. Bromine breaks down quickly in sun light so more bromine will need to be used in outdoor pools than will be needed for indoor pools. Bromine is more effective than chlorine in hot temperatures, which is why bromine is most commonly used in spas.