



Fact Sheet on Cyanuric Acid and Stabilized Chlorine Products

What is cyanuric acid? - Cyanuric acid is a chlorine stabilizer for swimming pools. It is usually referred to as “stabilizer”. It should not be confused with muriatic acid which is used to adjust the pH.

Where does cyanuric acid come from? – Two of the most common chlorine products used for disinfection are dichlor and trichlor. Dichlor and trichlor contain both chlorine and cyanuric acid so it is not necessary to add cyanuric acid to the pool water. Stabilizer (aka cyanuric acid) is also sold at most pool supply stores. Cal-hypo and liquid chlorine do not contain stabilizer.

What does cyanuric acid do? – Cyanuric acid combines with free chlorine in pool water, protecting it from the sun’s ultraviolet rays and reducing chlorine loss. Properly managed, cyanuric acid can reduce the amount of chlorine needed to maintain the minimum chlorine residual in an outdoor pool.

Many chemical suppliers recommend that the optimal range for cyanuric acid is 30-50 ppm, although a study published by the University of California at Davis¹, indicates that there is still significant savings in chemical costs with cyanuric acid levels as low as 2 or 3 ppm.

What is the downside to cyanuric acid? – By forming temporary binding with the free chlorine, cyanuric acid will reduce the overall effectiveness of chlorine. As the level of cyanuric acid rises, free chlorine’s ability to act as a disinfectant is weakened. The amount of time it takes to kill bacteria lengthens as the concentration of cyanuric acid increases.

In the hot summers chlorine will be consumed, however, cyanuric acid accumulates in the pool water as a waste product. Once cyanuric acid is added to the pool water, it will remain in the water.

How much is too much cyanuric acid? – The California Health and Safety Code has set the maximum level at 100 ppm.

It takes much longer for chlorine to kill bacteria in water with a cyanuric acid level over 50ppm, than in water without cyanuric acid. As the level of cyanuric acid builds up, the chlorine will become increasingly less effective resulting in problems such as increased cloudiness and excessive combined chlorine.

How do I test for cyanuric acid? – The California Health and Safety Code requires pool/spa operators to test their cyanuric acid level at least once a month and to maintain records. A cyanuric acid test kit can be purchase from most pool supply companies. You may also take a sample of your pool water to a supply company for testing. You must keep a copy of these test results.

How do I reduce the level of cyanuric acid in my pool or spa? – The most effective way to reduce cyanuric acid is to partially drain the pool and add fresh water. Some cyanuric acid will cling to the pool walls, plumbing and filtration system, so even after completely draining and refilling the pool, there will probably still be moderate levels of cyanuric acid in the pool water.

Should cyanuric acid be used in hot tubs or spas? – Even moderate levels of cyanuric acid can increase the amount of time it takes chlorine to kill *pseudomonas aeruginosa* (the bacteria that causes “hot tub itch”). It can take as much as a hundred times as long to kill compared to a spa without cyanuric acid. For this reason, avoiding the use of cyanuric acid is recommended. New spas are not permitted to install systems that feed cyanuric acid into the water.

I have an indoor pool. Should I use cyanuric acid? – No. Cyanuric acid is intended to reduce the loss of free chlorine caused by the sun’s ultraviolet rays. Indoor pools are not exposed to direct sunlight and do not benefit from adding cyanuric acid or using products containing cyanuric acid.

Summary

1. Cyanuric acid and stabilized chlorine (dichlor or trichlor) should only be used in outdoor swimming pools. It should not be used in indoor swimming pools, spas or hot tubs.
2. Both dichlor and trichlor release cyanuric acid to the pool water. It is not necessary to put additional cyanuric acid into a pool that uses dichlor or trichlor.
3. Pools that use cyanuric acid are required to maintain a free chlorine residual of 2.0 ppm.
4. Cyanuric acid should be tested at least once a month.
5. Cyanuric acid levels must be maintained below 100 ppm.
6. Partially drain pool and add fresh water to reduce cyanuric acid concentration.

References

1- Williams, Kent. “Cyanurics – Benefit or bomb?”. *Professional Pool Operators of America*. Newcastle, California 1997.