

**TECHNICAL BULLETIN****Free Chlorine Testing**

**Question:** My DPD test kit shows I have 3 ppm free chlorine while my AquaChek™ Test Strips say I have 0 ppm free chlorine. Which test is correct?

First, here's some background information: Free Available chlorine is that portion of chlorine in the pool or spa that sanitizes the water by killing any bacteria that may be present. There are two forms of chlorine present in a pool or spa: free chlorine and combined chlorine. Total chlorine is the measurement of both combined chlorine and the free chlorine. Combined chlorine is formed when bather wastes (urine, sweat, lotions, oils) or debris in the pool combine with the chlorine. High levels of combined chlorine may be found in the spring when opening your pool, or in times of high bather load. Combined chlorines are also known as chloramines and do not sanitize the water as effectively as free chlorine. When high levels of combined chlorine are present in the pool or spa, it is time to shock to remove the wastes that are present. To determine the chloramine level of your pool or spa, subtract your free chlorine reading from your total chlorine reading.

Most test kits provide a way to test both free and total chlorine: AquaChek *Select* and AquaChek *Silver* are two products that test for both free and total chlorine. The chemistry used in the test for free chlorine in these two products, as well as the free chlorine test found on AquaChek *Yellow*, is syringaldazine. It is a chemical that is specific for free chlorine. Chloramines do not react with syringaldazine.

**Answer:** AquaChek test strips will provide you with the correct answer!

If testing for free chlorine using a DPD test kit, be aware that high levels of combined chlorine, or chloramines, can cause false positives when using DPD #1 test for free chlorine. This will not happen when using AquaChek test strips for testing free chlorine.

So, if you are testing free chlorine with a DPD liquid or tablet kit and comparing results to an AquaChek free chlorine test strip, you can be certain that your test strips are giving you the most reliable results, with no interferences or false positives.

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Cooper, Wm. J., N. M. Roscher, and R.A. Slifker. Determining Free Available Chlorine by DPD and Facts Procedures. Research and Technology (1982).

Moore, Howard E., M.J. Garmendia, and W.J. Cooper. Kinetics of Monochloramine Oxidation of n,n-diethyl-p-phenylenediamine. *Enviro. Sci. Technol.*, Vol 18 (1984).

**Test out this theory:**

In order to confirm that this is taking place, take a small sample (3 to 4 cups of water) out of the pool. Add a small amount of chlorine (for example, a teaspoon of bleach or several dichlor granules) directly to the sample to be sure that a chlorine residual can be established in this small sample. They should

be able to measure the free chlorine right in the sample almost immediately after the chlorine has been added. This is representative of the rest of the pool. If a chlorine residual can be established in the small sample, then they'll know that the actual pool can be treated in the same way. Additionally, the DPD or OTO test will measure the same as the strips at this point confirming that the combined chlorine was causing a false reading for the liquid/tablet test.