AquaPhoenix SCIENTIFIC

FAQ

9 Tests in 60 Seconds!

LaMotte

WaterLink® SpinTouch® CW

Frequently Asked Questions (FAQ)

How does the Spin Touch® meter work?

The LaMotte Spin Touch® Photometer is a colorimeter that uses centrifugal fluidics photometry. This just means that it spins a test disk, with prefilled reagents, to fill specific test cells, and then uses several light sources to test the color changes in those cells. It runs all eight parameters at one time, delivering fast results. The system allows for fast, reliable testing results using established colorimetric methods.

What cooling tower parameters are currently available?

Currently the Spin Touch® Cooling Tower Disks test pH, alkalinity, free and total chlorine, calcium and total hardness, copper and iron. Tests for silica and phosphate are currently in development.

How does this test method compare to other available methods, such as drop count titrations?

While the Spin Touch® meter uses established colorimetric reagent test methods, like those used in a color wheel or color block, it's application within a disk is a little different. The meter introduces reagents, pre-measured inside each cell, that provides the necessary test buffers and indicators. This produces a color-change, which is measured using a photometer, where light absorption is measured through the cell and compared to a curve. This is very similar to a digital colorimeter used in water testing.

The multiple parameters and spinning disk present unique approaches to testing. However, the disk is similar to other test methods like drop count titrations and colorimetric wheel tests. The test procedures have potential interferences and limitations just like other tests. The tests have +/- 5-15% accuracy and precision. This is similar other test methods. However, the specific interferences and accuracies can be different to other methods, meaning when you compare results to drop count titration, the results can be different. The Spin Touch® also is reliable, meaning that you will find consistent results to help you measure and run a program.

The Spin Touch® results are not similar to what I am used to with other test methods.

You should not expect the Spin Touch® to perform exactly like other test methods. Each method has unique chemistries, procedures, potential issues and interferences. It is important to understand how the disk operates and potential issues. For example, in drop count titration, proper sample fill, how the dropper bottle is held, bottle tip issues and certain interferences can greatly affect results in a way you may not be aware of. The Spin Touch® similarly can be affected by proper disk handling and fill, and potential interferences.

The Spin Touch® uses slightly different test procedures than you may be used to. For example, most likely you have used a titration method to measure hardness. The Spin Touch® uses a colorimetric method, and test interferences will be different from other methods you may be familiar.

For example, the drop count titration method you are used to may be +/-20% in accuracy. Where the Spin Touch® meter is also +/-15% accurate. This means you may see a range that differs from other method's results. Or a specific chemical may not interfere with one test, but interferes now with the Spin Touch® meter. What is most important is continued repeatability, that the results are similar from test to test. This allows you to test, measure and run a water treatment program.

What is the accuracy of the Spin Touch® meter tests?

The specific tests differ in accuracy, but typically have between 5-15% precision. This is a measure of how close to the actual result the readings are. The meter is highly precise, meaning the tests are very similar test to test. This is most important in testing water as it means you can apply a test measurement program and respond to changes in results.

Like all tests, proper procedure is required for accurate and consistent results. This includes properly filling the disk. The disk procedures, manual and video shows this technique.

What type of applications are best fit for the Spin Touch® meter?

The Spin Touch® meter requires a moderately sized photometer. The test results are fairly precise, but can be limited at times in precision. The tests are highly accurate, meaning you can get consistent trends over time. Finally, the disks are very easy to use. For these reasons, we feel the meter best fits end-user applications for testing. For example, an end-user can apply the disks to make daily testing for a cooling tower easy and affordable, ensuring consistent data for the water treater.

My results seem wrong, what can be causing this?

The number one reason for questionable results is the underfilling or overfilling of the Spin Touch® disk. An underfilled disk particularly will dramatically change certain results, not properly filling the sample cell on the disk. Be sure to follow the instructions for proper filling, filling the final cell to the top all the way to the final fill line.

There are some common interferences that can affect the disk. The key issues are turbidity and free iron. Turbid waters can present materials that block the channels in the disk, underfilling the cells. You may need to filter the sample using filter paper and funnel to remove excess turbidity. This should not affect wet chemistry tests.

Excess iron in the water, rusty water, can cause discoloration or blockage that affects results. Filtering may help in these situations.

Finally, if the water is excessively colored, this can affect the Spin Touch® disk, like all colorimetric tests.

What are the common interferences in cooling water with the Spin Disks?

In cooling waters, there are some common interferences that can affect specific tests. Iron, manganese or zinc can affect the hardness test, as it can interfere with the test indicators. There are ways to adjust the firmware to help account for this. Certain biocides in high levels can affect some tests, particularly the alkalinity test. Quats and polyquats specifically can lead to these problems. Phosphates and permanganate can affect iron readings.

My chlorine numbers appear to be off, what can be interfering with this?

The chlorine tests in the Spin Touch® use a standard DPD test method. These have common potential interferences, including where excess chlorine above 15ppm can bleach the reagent and show a false negative for chlorine. High level of salts and quats can affect readings.

My hardness numbers appear to be off, what can be interfering with this?

Metals (copper, iron, manganese) can interfere with the hardness test. Unlike titration tests, the disk does not allow you to adjust indicators to account for this. There are some meter adjustments that can help. However, it is important to understand the potential offset in readings, and then adjust final results. The meter is highly accurate and repeatable, so trending becomes most important in a water treatment program, as long as the inference is understood. Occasionally the Calcium hardness metal bead can be stuck if the disk was overheated. Refer to the color guide for an example.

My alkalinity number does not appear correct, what can be interfering with this?

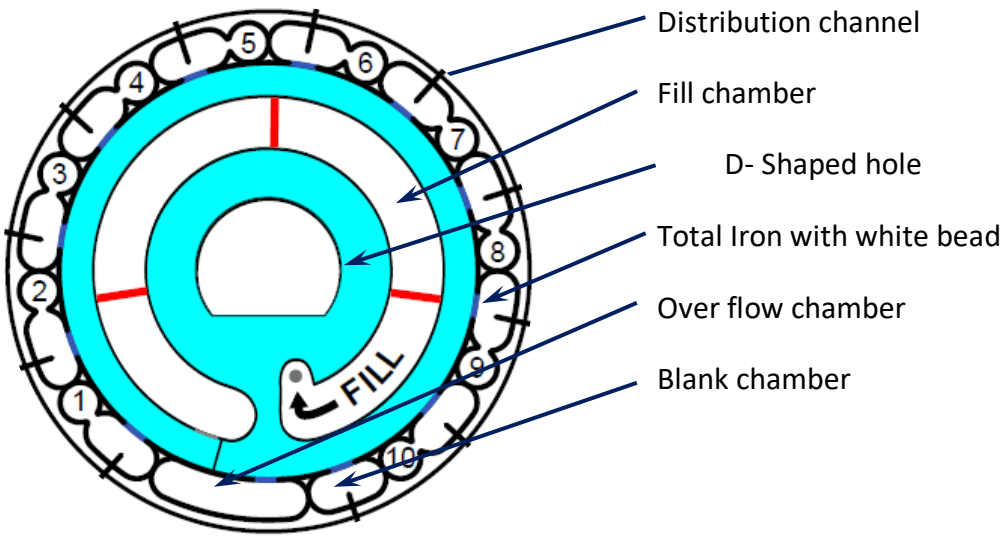
The disk will always have a color change for alkalinity. You can refer to the color guide for more information. If the cell is colorless, there is an issue in the test procedure or fill. Finally, quats and polyquats can interfere with the alkalinity reading.

Cooling Water Disk Color Guide

Contains:

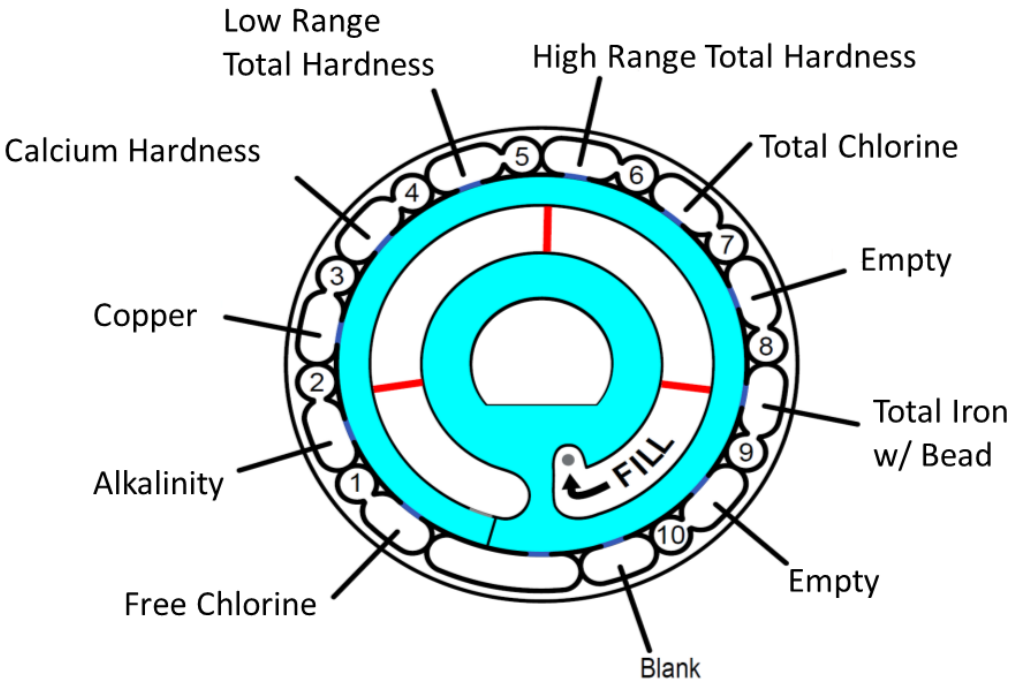
Disk images with labels
Images of normal reagent colors
Images of common problems

Below is a typical spin disk with chamber numbers and parts labeled.



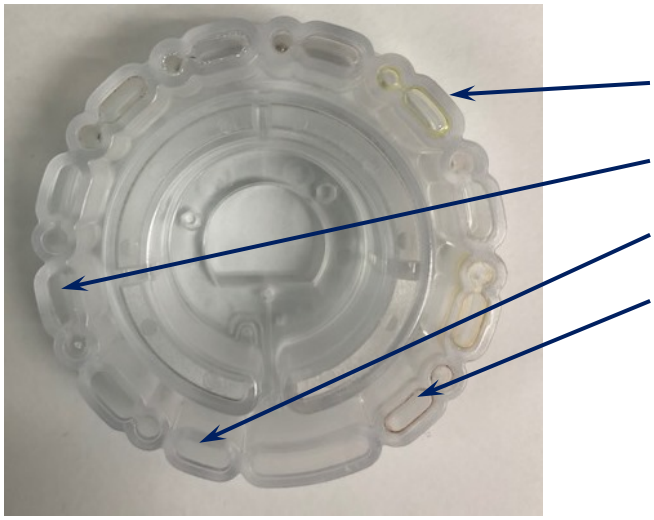
BBs (mixing balls) are small metal balls that mix the reagent and are located in each chamber where the numbers are.

The diagram for a 4339 (cooling water) disk is shown below. Each chamber is numbered, so chamber 1 is free chlorine; chamber 2 is Alkalinity, etc.

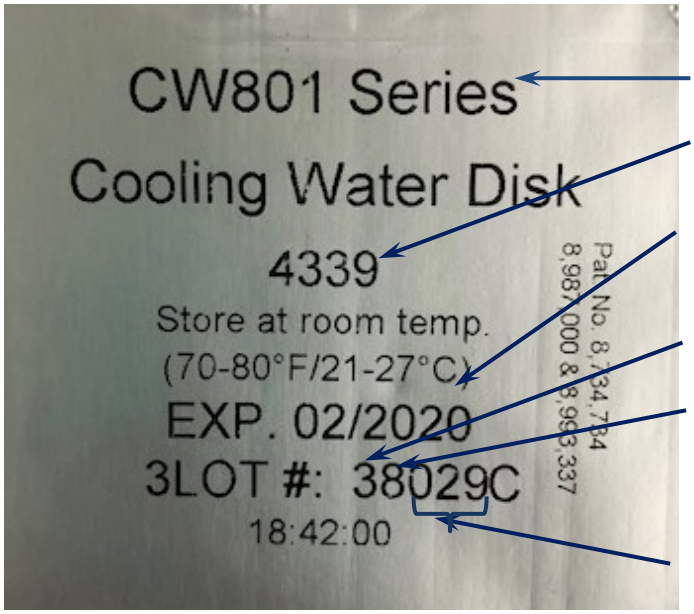


This is an example of a cooling tower disk after spin out, the colors in the wells determine the readings.

Cooling water, 4339, disk unspun, upside down: The color in the wells is the dried reagent ready for testing and is normal of an unused disk.



How to read a disk lot number and other disk foil information:

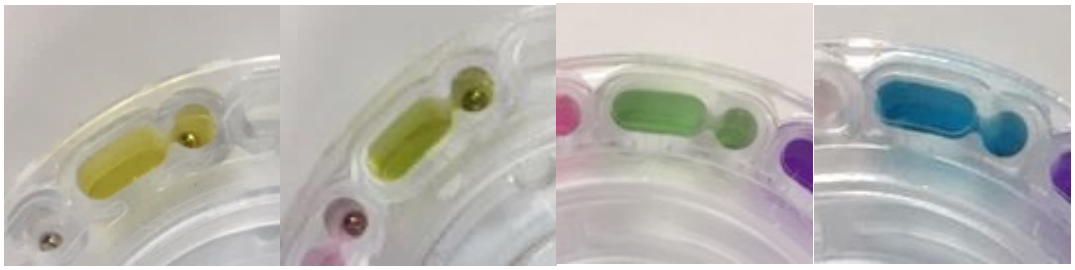


Reagent Color Guide

Free Chlorine/ Bromine – Well 1

Colorless Very low | Low | Medium | High

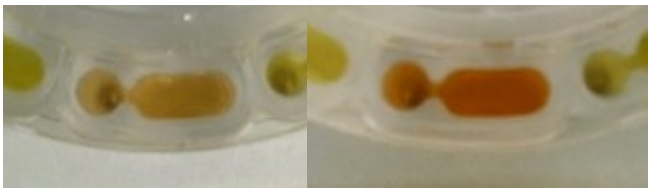
Alkalinity – Well 2



No alkalinty–Yellow | low-lime green | Medium-green | High- blue

The alkalinity reagent well of a spun disk should never be colorless.

Copper - Well 3

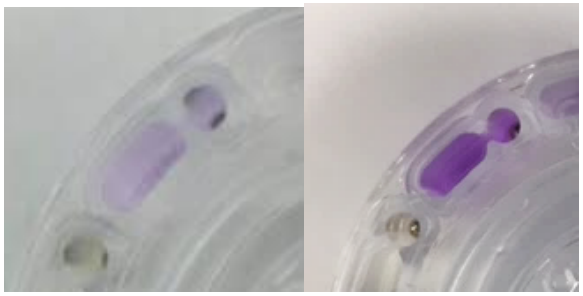


Colorless | Low | Medium | High

Calcium Hardness – Well 4

Low | Medium | High

Low Range Total Hardness – Well 5



Colorless
Very low Low High

High Range Total Hardness – Well 6

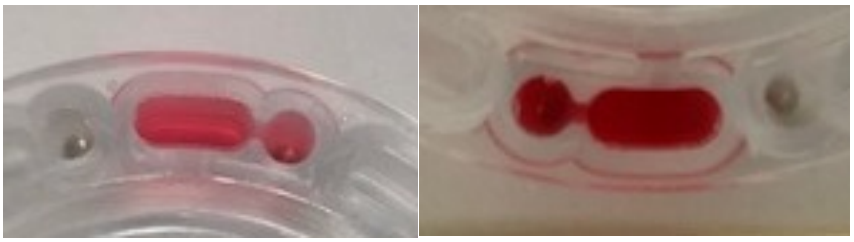
Colorless
Very low Low Medium High

Total Chlorine – Well 7

Colorless
Very Low Low Medium High

Well 8- Empty

Iron – Well 9



Colorless
Low Medium High

Well 10 - Empty

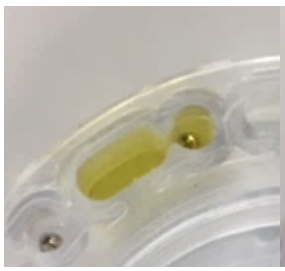
Potential Problems

Customer reports Alkalinity readings of 0 ppm:

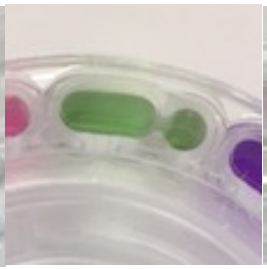
Have the customer check the color of the reagent and send an image of a spun disk to customer support.

If the reagent is yellow, the reading of 0 ppm alk is likely accurate and the customer should check the cooling water. If the alkaliny is green or blue, the issue is not the reagent. The alkalinity chamber of a spun disk should never be colorless.

Readings of 0 ppm alkalinity when the reagent is still green or blue can be due to running the disk as the incorrect sequence, meter calibration issues, or a bubble in the blank chamber due to inaccurate filling of the disk (see images below).


No alkalinty–Yellow

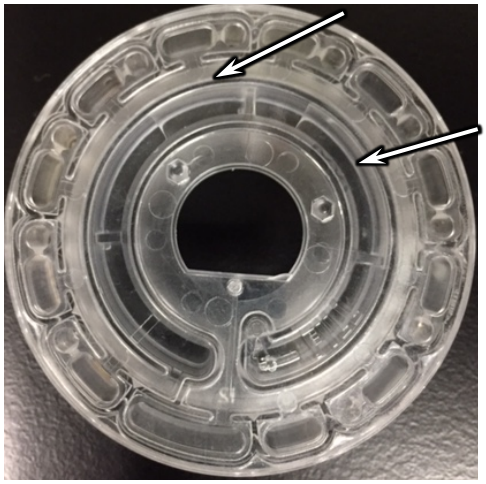

low-lime green

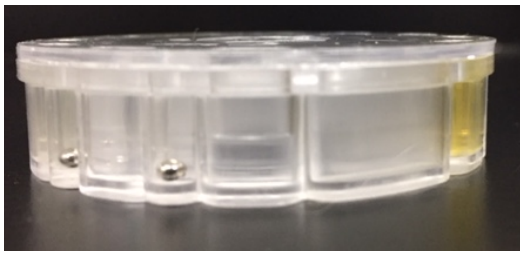

Medium-green


High- blue

Bubbles in fill chamber/ Bubble in the blank:

Bubbles in the fill chamber of an unspun disk, left, often lead to bubbles in the blank cell when the disk is spun, right. This resutls in alkalinity readings of 0 ppm and unusually low or high readings in other reagents. If there are bubbles in the fill chamber like the ones on the left after filling, you can slowly draw back on the syringe until the bubbles clear, then refil the same disk. As long as liquid did not enter the distribution channel (around the edges) the disk will be fine.





Missing reagent BB / reagent not mixing:

This will cause very erratic or inaccurate readings

Occasionally the Ca-only (chamber 6) will have BB's stuck in the reagent. Usually when a disk was missing dessicant or got very hot before testing.

Hub wear:

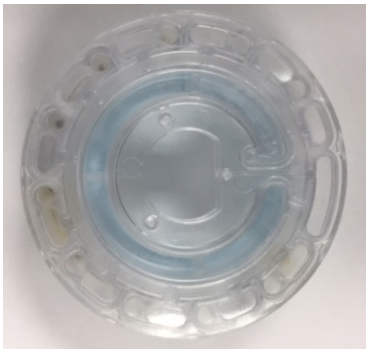
A new hub (left) will have sharp, shiny edges. A worn hub (right) will have dull rounded edges that look more grey than the rest of the hub. In cases of severe hub wear data may spike or read inaccuratly. The hub on the right caused poor meter preformance and had to be replaced.

New hub

Worn hub

Color in fill chamber:

This can result from reagent spraying or from color in the client's water. Below is an extreme example in fill water. The blank should take out the effect of the color, but in extreme cases, many disk results will be affected.



Before spinning

After spinning