

“You Need to Know”

FOUNTAIN SOLUTION pH & CONDUCTIVITY

pH is a measurement of the degree of acidity or alkalinity of fountain solution. Small p for potential and capital H for hydrogen. Depending on the formulation utilized in your facility, the pH of your acid based fountain solution in its concentrate ranges from 1.9 to 5.0. If the fountain solution is buffered the range is usually 3.5 to 5.0. Buffered simply means that if you add one ounce per gallon of water or 25 ounces of your fountain solution per gallon of water, the pH will be the same yet the conductivity will rise with each additional ounce added.

pH SCALE

0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14

0 ↻ 6.9 acid 7 ↻ neutral 7.1 ↻ 14 alkaline

A whole number change on the pH scale is ten times, or pH 4.0 has ten times more acidity than pH 5.0. The pH scale is therefore important to accurately read and measure.

Conductivity is used as a measure of the amount of dissolved solids in a solution when mixed in water. The measurement is in MHO which is the opposite of resistance “OMH”. For convenience you will read a fraction of MHO, thus Micromhos or micosiemens /cm is used. These dissolved solids contain ions which conduct electricity. For example, tap water/base water hardness can be determined by its conductivity of dissolved ions of mineral salts or metals;

SOFT WATER	80 TO 300 CONDUCTIVITY
MEDIUM WATER	301 TO 500 CONDUCTIVITY
HARD WATER	501 TO 900+ CONDUCTIVITY

The pH meter should be used to check the mixed fountain solution holding or chill tanks. If the pH of the mixed fountain solution drifts from acid to neutral or acid to alkaline, ink water balance problems usually occur. Daily pH logs remain an excellent preventative maintenance tool in printing.

Conductivity should be used to check the fresh mixture of fountain solution in water. This is especially true from a proportioning system. First create a base log;

1. place 128 ounces or 1 U.S. gallon of your tap/base water in a clean non-metallic container
2. add one ounce of your fountain solution - now read and log the conductivity - pour your read sample back into the non-metallic container and

3. add one ounce of your fountain solution - (now totaling two ounces) now read and log the conductivity - pour your read sample back into the non-metallic container and
4. add one ounce of your fountain solution - (now totaling three ounces) now read and log the conductivity – pour your read sample back into the non-metallic container and
5. repeat this process until you have a log from 1 ounce per U.S. gallon of water to 6 ounces per U.S. gallon of water

This log will be your facility standard and this standard should be performed and updated each quarter of the year. If the conductivity changes each quarter you should investigate your tap/base water and or your fountain solution concentrate.

With your conductivity meter and conductivity log, pull a sample from your proportioner each day and insure the proportioner is proportioning within 75 conductivity of your log sample: AS AN EXAMPLE ONLY: YOUR LOG FOR THE FIRST QUARTER OF THE YEAR WAS 5 OUNCES = 1850 CONDUCTIVITY, YOUR PROPORTIONER IS SET AT 5 OUNCES PER GALLON, YOUR DAILY PULL SAMPLE SHOULD READ WITHIN 75 CONDUCTIVITY OF 1850. If your pull sample does not read within 75 conductivity of your log, you have discovered and perhaps prevented a potential problem. To investigate and find the reason for the high or low reading, fill the non-metallic container with 128 ounces or 1 U.S. gallon of your tap/base water and add 5 ounces of your fountain solution. You should read 1850 - if you do read 1850 look for a problem with your proportioner. If you do not read 1850 check your base water or your fountain solution concentrate.

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