

Conductivity and pH for REFLEXX™ Dilutions

Background

REFLEXX is a new product Envirotech has to offer its customers. It is a new peracetic acid one-step, no rinse sanitizer designed for the food, beverage, and dairy industries. It is a combination of peracetic acid, hydrogen peroxide, and nitric acid. REFLEXX is typically diluted 1 fl. oz. per 4-7 gallons of water. There are several methods available to ensure correct dosage. A common method used for dosing product is the use of a conductivity recorder, which would be more accurate and reliable in general than pH measurement. A conductivity recorder measures the conductivity of water. A study was completed in order to duplicate the average conductivity measurements expected for the different dilutions.

Methods

Typical dilutions used by the food, beverage, and dairy industries were replicated in this study. De-ionized (DI) water was used to prepare the four dilutions. The dilutions prepared were as follows:

REFLEXX Dilutions

- 1fl. oz. per 4 gallons DI water
- 1fl. oz. per 5 gallons DI water
- 1fl. oz. per 6 gallons DI water
- 1fl. oz. per 7 gallons DI water

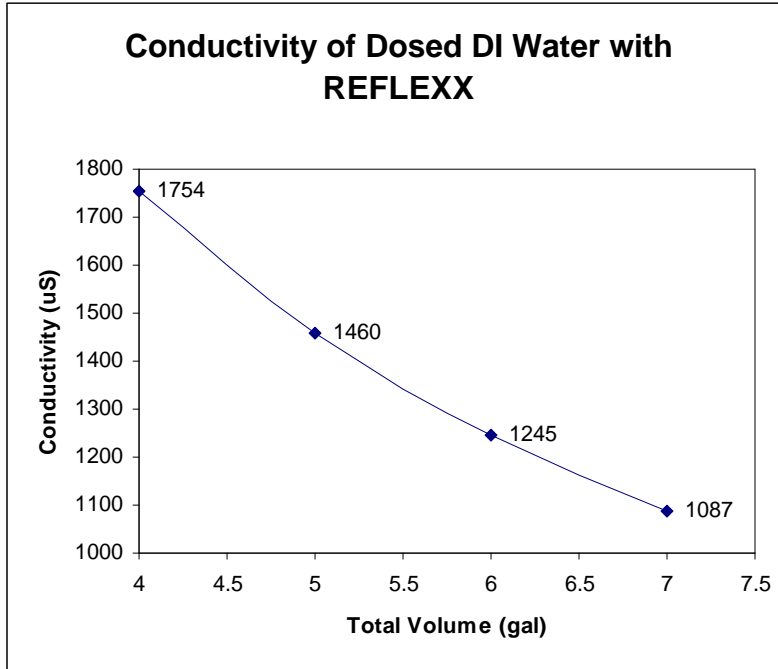
The pH and conductivity of the dilutions were recorded. The pH was measured using a HANNA Instruments pH 210 Microprocessor pH Meter. The conductivity was measured using a HANNA Instruments DIST 3 conductivity meter with a range of 0-1999 μ S. The results are illustrated in graphs below for easy viewing.

Results

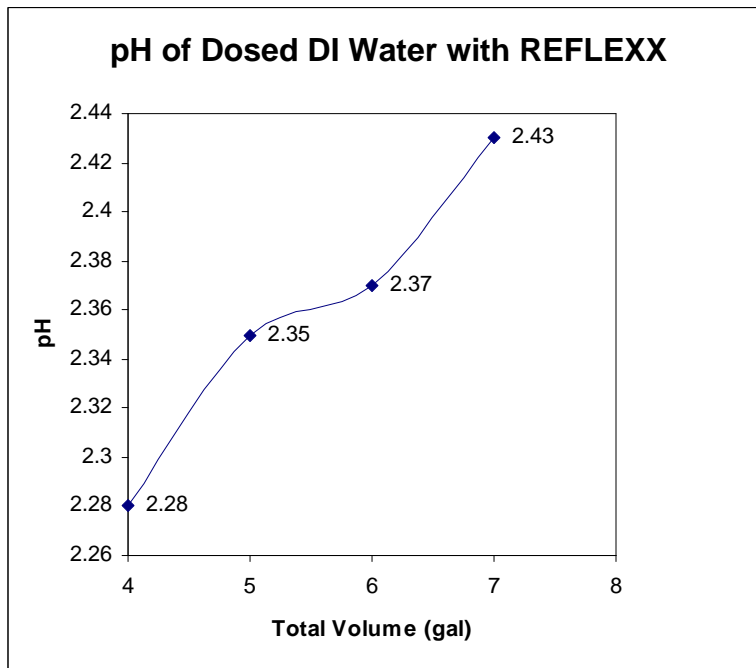
Graph 1 illustrates the different conductivity measurements for the four dilutions. As the dilutions increase, the conductivity decreases. The conductivity ranges from a high of 1754 μ S at a dilution of 1fl. oz. per 4 gallons DI water to a low of 1087 μ S at a dilution of 1fl. oz. per 7 gallons DI water.

Graph 2 illustrates the expected pH at each dilution. The pH is not linear therefore the graph will not produce a straight line, unlike the results in Graph 1. The pH ranges from 2.28 for the 1fl. oz. per 4 gallons DI water dilution to a high of 2.43 for the dilution of 1fl. oz. per 7 gallons DI water. As the dilutions increase, so does the pH, because there is a higher ratio of water to acid.

Graph 1



Graph 2



Conclusion

- This study was designed to establish parameters for REFLEXX dilutions used in the food, beverage, and dairy industries.
- The graphs provide customers using conductivity recorders with an accurate baseline conductivity and pH reference for typical REFLEXX dilutions.
- One may estimate the conductivity of their particular solution, at a given dilution rate, by adding the conductivity reading of the dilution water to the readings presented in the chart on the above page. However, the resulting pH must be measured as well as the PAA concentration to assure established parameters that will obtain maximum efficacy and milkstone or limestone prevention.

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