



# AQUASTAR®

## Buffers for Strongly Acidic and Basic Samples

Karl Fischer (KF) titration is pH-dependent reaction. The optimum reaction rate is observed in the pH range of approximately 5.5 to 8. Below that range, titration proceeds very slowly (see Figure 1 below), while above that range, the reaction rate increases due to interfering side reactions, leading to sluggish or vanishing endpoints and erroneously high results. Certain pharmaceutical, petrochemical, and food samples can change the pH of the KF solvent to either the acidic or basic extremes, and thus require buffering in order to produce accurate results in a timely manner.

Historically, KF analysts have used solid buffering substances like Benzoic acid and Salicylic acid for analyzing strongly basic samples, and Imidazole, 1-methylimidazole or Pyridine for analyzing strongly acidic samples.

Now, through collaboration with the extensive research efforts of our parent company, Merck KGaA, Darmstadt, Germany, EMD Chemicals has introduced two new ready-to-use reagents that simplify volumetric KF analysis of strong acids and bases:

- AQUASTAR® Buffer for Strong Acids                      EMD No: 1.88035.0500
- AQUASTAR® Buffer for Strong Bases                      EMD No: 1.88036.0500

These two products can be used in conjunction with conventional volumetric solvents, such as CombiMethanol, CombiSolvent, and others. Their addition to the volumetric solvents in the ratio of 10-40% by volume produces a stable buffered working medium for analyzing strongly acidic or alkaline samples, enabling the KF reaction to proceed in the optimal pH range.

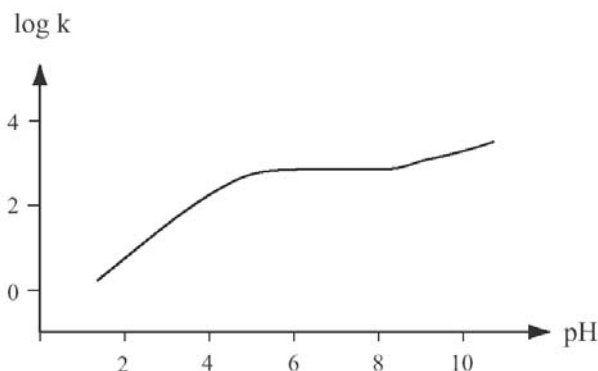


Figure 1. Effect of pH on KF reaction rate.

For additional AQUASTAR® product Technical and Applications Support call: 1-800-222-0342