

pH 9 and Heat on Zero-Flow CE Capillary Stability Effects - Tech Information

Date: 20-DECEMBER-2012 Last Updated: 28-FEBRUARY-2026

Overview

This post explains why Zero-Flow CE capillaries have significantly reduced lifetime when operated at pH9 and moderate temperatures (30–35 °C). Above pH8, the silica structure and the organo-silane bond anchoring the linear polyacrylamide coating become increasingly susceptible to hydrolysis. Buffers with moderate ionic strength accelerate this process, leading to degradation, pitting, and loss of coating integrity. The rate of deterioration depends heavily on run times, buffer composition, ionic strength, and conditioning procedures, making lifetime difficult to predict.

For this reason, Zero-Flow and Controlled-Flow CE capillaries are not designed for sustained operation above pH8.

pH 9 at 30–35 °C Shortens the Useful Lifetime of Zero-Flow Capillaries

Using Zero-Flow™ capillaries at pH9, even when the buffer has only moderate ionic strength, will significantly reduce their useful lifetime.

It is difficult to estimate the exact number of runs a user may achieve under these conditions because longevity depends on several variables, including:

- your specific run times
- buffer composition
- ionic strength
- conditioning procedures

However, these capillaries are not designed to operate above pH8.

At higher pH, both the silica substrate and the organo-silane bond that anchors the polyacrylamide coating become susceptible to hydrolysis, degradation, and pitting, especially when exposed to elevated temperatures and ionic strength. This leads to coating damage and reduced performance.

Click [HERE](#) for CE capillary ordering information and images.