

What is pKa and how is it related to pH in HPLC mobile phases and sample diluents – FAQ

Apparent pKa also known as the acid dissociation constant is a measure of the apparent overall acidity of a compound while the pKb is a measure of the apparent overall basicity of a compound. pH is a measure of the acidity or alkalinity of an aqueous solution.

If a pH value of a solution equals the pKa/pKb a compound in that solution then approximately 50% of the compound will be neutral and 50% will be ionized in a constant state of equilibrium and change.

This is a very unstable situation for HPLC or **CE**. In practical and layman terms, we can define pKa as the pH at which 50% is ionized and 50% is neutral. This equation holds for aqueous solutions mostly so pH and pKa can be different when organic solvents (e.g. acetonitrile) are present.

For the purposes of HPLC and **CE**, it is highly recommended that any run **buffer**, mobile phase or sample diluent be made at least one full pH unit above or below the pKa or pKb of the analytes when possible for increased method **precision**.

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