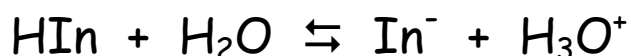


## Indicators

An indicator is just the opposite of a buffer. An indicator is a conjugate acid-base pair present in such a small molar concentration as not to affect the overall pH of the solution. The acid and base forms are differently colored.

Although there are a variety of indicators, they are generally weak organic acids, and can be represented by the following acid-base equilibrium.



then

$$[\text{H}^+] = K_a \times \frac{[\text{HIn}]}{[\text{In}^-]}$$

If the indicator is so strongly colored that only a small amount is needed, it will not significantly contribute to the acidity or basicity of the solution. The ratio of the two forms, HIn, and In<sup>-</sup>, reflects the [H<sup>+</sup>] in the solution. An indicator will have its color change at [H<sup>+</sup>] values close to K<sub>a</sub> for the indicator, or a pH values close to pK<sub>a</sub> for the indicator. A variety of indicators are known, each with its own pK<sub>a</sub>.