

Answer to Question #39038, Chemistry, Organic Chemistry

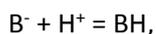
Question

OH^- (From KOH) vs $\text{C}_2\text{H}_5\text{O}^-$ ($\text{C}_2\text{H}_5\text{OH}$) Which is More strong?

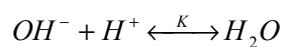
Answer

Strength of the base can be considered as its affinity to proton.

Consider the equilibrium

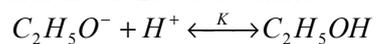


where B^- denotes the base. More stronger base will have higher value of the equilibrium constant. The latter is about 10^{14} for water:



$$K = \frac{[\text{H}_2\text{O}]}{[\text{OH}^-][\text{H}^+]} = 10^{14} \text{ mol}^2\text{l}^{-2}$$

and about 10^{16} for ethanol



$$K = \frac{[\text{C}_2\text{H}_5\text{OH}]}{[\text{C}_2\text{H}_5\text{O}^-][\text{H}^+]} = 10^{16} \text{ mol}^2\text{l}^{-2}$$

(two orders higher), hence $\text{C}_2\text{H}_5\text{O}^-$ is a stronger base.