**α-halogenation of aldehydes & ketones**

\[ \text{H}^+ \quad \left[ \overset{\ddagger}{\text{O-}} \text{H} \quad \overset{\ddagger}{\text{O-}} \text{H} \right] \Rightarrow \overset{\ddagger}{\text{O-}} \text{H} \]

\[ \overset{\ddagger}{\text{O-}} \text{H} \quad \overset{\ddagger}{\text{O-}} \text{H} \]

\[ \Rightarrow \overset{\ddagger}{\text{O-}} \text{H} \quad \overset{\ddagger}{\text{O-}} \text{H} \]

\[ \overset{\ddagger}{\text{O-}} \text{H} \quad \overset{\ddagger}{\text{O-}} \text{H} \]

\[ \overset{\ddagger}{\text{O-}} \text{H} \quad \overset{\ddagger}{\text{O-}} \text{H} \]

**acidic**

The product that forms is unlikely to react further, since the halogen creates a $\ddagger$ center immediately next to the carbonyl (□), making the $\text{C=O}$ less likely to open/ react.

**basic**

The circled $\alpha$-proton of the product (H) has a lower pKa (more acidic) than the $\alpha$-proton of the starting compound (H). Because the product is in the same reaction conditions as the original starting material, it will react further.