Diisopropylamide ion (1), usually prepared as the lithium salt (2), is a strong base but, due to steric hindrance at the electron-rich nitrogen atom caused by the bulky isopropyl groups, a very weak nucleophile.

Diisopropylamide ion is commonly used to convert enolizable aldehydes and enolizable ketones to corresponding enolate ions, for all practical purposes, quantitatively.

\[
\begin{align*}
\ce{H-C-CO} + & \ce{CH_3CN} & \rightarrow & \ce{CH_2-CO} + & \ce{CH_3CN} \\
1 & 2 & 3
\end{align*}
\]

\[
\begin{array}{c|c}
\text{compound} & \text{pK}_a \\
1 & 17 \\
2 & 40
\end{array}
\]

The reaction, for all practical purposes, is irreversible at –78°C, meaning that diisopropylamide converts 1 to enolate 2 completely.
see also directed aldol reaction

Contributors

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