An active methylene compound is a compound that has the following general structural formula.

\[
\begin{align*}
\text{H} & \quad \text{E}^1 \\
\text{H} & \quad \text{E}^2
\end{align*}
\]

\( \text{E}^1, \text{E}^2 \) = a functional group that withdraws electrons by resonance

eg:

The conjugate base of an active methylene compound is highly resonance stabilized.

eg:
Consequently, active methylene compounds are highly acidic and can be deprotonated, for all practical purposes, irreversibly, using common strong bases, such as the hydroxide ion or alkoxide ions.

\[
\text{compound} + \text{OH}^- \rightarrow \text{product} + \text{H}_2\text{O}
\]

<table>
<thead>
<tr>
<th>compound</th>
<th>$pK_a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>water</td>
<td>16</td>
</tr>
</tbody>
</table>

equilibrium constant, $K = \frac{10^{-9}}{10^{16}} = 10^{-25}$

Notice that the equilibrium constant, $K$, is very large.
• Gamini Gunawardena from the OChemPal site (Utah Valley University)