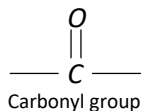


Introduction.

Carbonyl compounds are of two types, aldehydes and ketones. Both have a carbon-oxygen double bond often called as carbonyl group.



Both aldehyde and ketones possess the same general formula $C_nH_{2n}O$.

Aldehyde	Ketone
<p>Aldehydes may be considered as derivatives of hydrocarbons in which two hydrogen atoms of the end carbon atom have been replaced by a bivalent oxygen atom.</p> $\begin{array}{ccc} \begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{H} \\ \\ \text{H} \\ \text{Methane} \end{array} & \xrightarrow[+ [O]]{-2H} & \begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} = \text{O} \\ \text{Formaldehyde} \end{array} \end{array}$ <p>Aldehydes contain the monovalent group $\begin{array}{c} \text{H} \\ \\ -\text{C} = \text{O} \end{array}$ (aldehydic group) linked to a hydrogen atom or an alkyl group. Hence, the general formula of the aldehydes is represented as, $\begin{array}{c} \text{H} \\ \\ \text{R} - \text{C} = \text{O} \end{array}$ (R may be H or alkyl group).</p> <p>Aldehydes can also be regarded as the first oxidation products of primary alcohols.</p> $\begin{array}{ccc} \text{RCH}_2\text{OH} & \xrightarrow{[O]} & \text{RCHO} + \text{H}_2\text{O} \\ \text{Primary alcohol} & & \text{Aldehyde} \end{array}$	<p>Ketones may be considered as derivatives of hydrocarbons in which the two hydrogen atoms of a carbon atom present in the middle of carbon chain have been replaced by a bivalent oxygen atom.</p> $\begin{array}{ccc} \begin{array}{c} \text{H} \\ \\ \text{CH}_3 - \text{C} - \text{CH}_3 \\ \\ \text{H} \\ \text{Propane} \end{array} & \xrightarrow[+ [O]]{-2H} & \begin{array}{c} \text{O} \\ \\ \text{CH}_3 - \text{C} - \text{CH}_3 \\ \text{Acetone} \end{array} \end{array}$ <p>Ketones contain the divalent group $\begin{array}{c} \text{C} = \text{O} \end{array}$ (ketonic group) linked to two alkyl groups, same or different. Hence, the general formula of the ketones is represented as,</p> $\begin{array}{ccc} \begin{array}{c} \text{R} \\ \\ \text{C} = \text{O} \\ \\ \text{R} \end{array} & \text{or} & \begin{array}{c} \text{R} \\ \diagup \\ \text{C} = \text{O} \\ \diagdown \\ \text{R}' \end{array} \end{array}$ <p>Ketones can also be regarded as the first oxidation products of secondary alcohols.</p> $\begin{array}{ccc} \begin{array}{c} \text{CH}_3 \\ \\ \text{CHOH} \\ \\ \text{CH}_3 \\ \text{Isopropyl alcohol} \end{array} & \xrightarrow{[O]} & \begin{array}{c} \text{CH}_3 \\ \\ \text{C} = \text{O} \\ \\ \text{CH}_3 \\ \text{Acetone} \end{array} + \text{H}_2\text{O} \end{array}$