

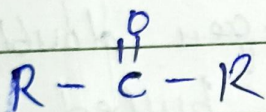
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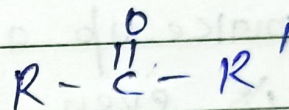
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Aldehydes and Ketones

Aldehydes and ketones are carbonyl comp^s. because they contain the carbonyl group ~~etc~~ ($>C=O$). Aldehydes have the general formula $R-CHO$ where at least one hydrogen atom is attached to the carbonyl carbon. Ketones have the general formula $R-CO-R'$ where the carbonyl carbon is attached to two alkyl or aryl groups. The ketones are called symmetrical or unsymmetrical ketones according as the two alkyl groups attached to the carbonyl gr. are the same or different.



Symmetrical Ketone



Unsymmetrical Ketone

Structure 1 — The carbon-oxygen double bond in aldehydes and ketones can be formulated in a manner similar to the carbon-carbon double bond in alkenes.

Carbon of carbonyl group is joined to three other atoms by σ bonds

which lie 120° apart from each other.

Since these bonds utilize sp^2 hybrid orbitals lying in the same plane, the ~~consequent~~ consequent shape resulted is trigonal ~~planar~~ planar. The remaining P-orbital of carbon overlaps with a P-orbital of oxygen to form a π bond, carbon and oxygen are thus joined by a double bond. Oxygen is far more electronegative than carbon and so has a strong tendency to pull electrons in a carbon-oxygen bond towards itself. One of the two pairs of electrons that make up a carbon-oxygen double bond is even more easily pulled towards the oxygen. That makes the carbon-oxygen double bond very highly polar.

