Organic Functional Groups and Nomenclature

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| **Compound** | **Functional group** | **Structural formula** | **Condenses to** | **Example** |
| alkane | N/A |  H H | |– C – C – | | H H | – CH2 – CH2 –or– CH2CH2 – | CH3CH2CH3propane |
| alkene | alkene |  H  | – C = C – | H | – CH = CH –or– CHCH – | CH3–CH=CH2or CH3CHCH2propene |
| alkyne | alkyne | – C ≡ C – | – C ≡ C –or– CC – | CH3–C≡CHor CH3CCHpropyne |
| alkyl halide | halogen | – F– Cl– Br– I | N/A |  CH3CH2F fluoro ethane CH3CH2Cl chloro ethane CH3CH2Br bromo ethane CH3CH2I iodo ethane |
| alcohol | hydroxyl | – O – H | – OH | CH3CH2OH ethanol |
| aldehyde | carbonyl(at end of chain) |  O  | | – C – H | – CHO | CH3CH2CHOpropanal |
| ketone | carbonyl(in middle of chain) |  O  | | – C – | – CO – | CH3COCH3propanone |
| carboxylic acid | carboxyl |  O  | | – C – O – H | – COOH | CH3CH2COOHpropanoic acid |
| carboxylate ion | carboxylate |  O  | | – C – O- | – COO- | CH3CH2COO-propanoate ion |
| ester | ester |  O  | | – C – O – | – COO – | CH3COOCH2CH2CH3propyl ethanoate |
| amine | Amino | H | – N – H | – NH2 | CH3CH2NH2ethanamine |
| amide | amide |  O H | | |– C – N – | – CONH – | CH3CH2CONH2propanamide |

A blank space beside a bond line means a carbon chain (alkyl group) of any length is bonded there.\*

In an amino group, any H in the structure shown can be replaced with an alkyl group.

Structures are often drawn with bonds on angles, and often use a mixture of condensed and expanded forms.

Condensed forms must be drawn backwards (e.g. H2N– and HO– ) in some cases to preserve meaning.

\*In alkanes, alkenes, alkynes, aldehydes, carboxylic acids, and amides any of these can be also be a H. The bond that is part of the 'oate' in the ester can also be a H.