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 – | CH3CH2CH3  propane |
| alkene | alkene | H  |  – C = C –  |  H | – CH = CH –  or  – CHCH – | CH3–CH=CH2  or CH3CHCH2  propene |
| alkyne | alkyne | – C ≡ C – | – C ≡ C –  or  – CC – | CH3–C≡CH  or CH3CCH  propyne |
| 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 | CH3CH2CHO  propanal |
| ketone | carbonyl  (in middle of chain) | O  | |  – C – | – CO – | CH3COCH3  propanone |
| carboxylic acid | carboxyl | O  | |  – C – O – H | – COOH | CH3CH2COOH  propanoic acid |
| carboxylate ion | carboxylate | O  | |  – C – O- | – COO- | CH3CH2COO-  propanoate ion |
| ester | ester | O  | |  – C – O – | – COO – | CH3COOCH2CH2CH3  propyl ethanoate |
| amine | amino | H  |  – N – H | – NH2 | CH3CH2NH2  ethanamine |
| amide | amide | O H  | | |  – C – N – | – CONH – | CH3CH2CONH2  propanamide |

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.