**A-level Chemistry/OCR (Salters)/Functional groups**

< [A-level Chemistry](http://en.wikibooks.org/wiki/A-level_Chemistry) | [OCR (Salters)](http://en.wikibooks.org/wiki/A-level_Chemistry/OCR_%28Salters%29)

[**Organic compounds**](http://en.wikibooks.org/wiki/A-level_Chemistry/OCR_%28Salters%29/Organic_compounds) are best though of as relatively unreactive hydrocarbon skeletons decorated by **functional groups** — groups of atoms that undergo characteristic reactions. Compounds containing two or more different functional groups are described as **polyfunctional**.

| **Functional group** | **Family** | **Formula** | **Structure** | **Example** |
| --- | --- | --- | --- | --- |
| chloroformyl group | [acyl chloride](http://en.wikipedia.org/wiki/acyl_chloride) | RCOCl | [Acyl-chloride.png](http://commons.wikimedia.org/wiki/File:Acyl-chloride.png) | [Acetyl-chloride-2D-flat.png](http://commons.wikimedia.org/wiki/File:Acetyl-chloride-2D-flat.png)[Acetyl-chloride.png](http://commons.wikimedia.org/wiki/File:Acetyl-chloride.png)[Acetyl-chloride-3D-balls.png](http://commons.wikimedia.org/wiki/File:Acetyl-chloride-3D-balls.png)  [ethanoyl chloride](http://en.wikipedia.org/wiki/acetyl_chloride),  CH3COCl |
| hydroxyl group | [alcohol](http://en.wikibooks.org/wiki/A-level_Chemistry/OCR_%28Salters%29/Alcohols) | ROH | [Alcohol-(general)-skeletal.png](http://commons.wikimedia.org/wiki/File:Alcohol-%28general%29-skeletal.png) | [Ethanol-2D-flat.png](http://commons.wikimedia.org/wiki/File:Ethanol-2D-flat.png)[Ethanol-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Ethanol-2D-skeletal.png)[Ethanol-3D-balls.png](http://commons.wikimedia.org/wiki/File:Ethanol-3D-balls.png)  [ethanol](http://en.wikipedia.org/wiki/ethanol), C2H5OH |
| formyl group | [aldehyde](http://en.wikipedia.org/wiki/aldehyde) | RCHO | [Aldehyde2.png](http://commons.wikimedia.org/wiki/File:Aldehyde2.png) | [Acetaldehyde-2D-flat.png](http://commons.wikimedia.org/wiki/File:Acetaldehyde-2D-flat.png)[Acetaldehyde-tall-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Acetaldehyde-tall-2D-skeletal.png)[Acetaldehyde-3D-balls.png](http://commons.wikimedia.org/wiki/File:Acetaldehyde-3D-balls.png)  [ethanal](http://en.wikipedia.org/wiki/acetaldehyde), CH3CHO |
| alkenyl group | [alkene](http://en.wikipedia.org/wiki/alkene) | R2C=CR2 | [Alkene-2D-flat.png](http://commons.wikimedia.org/wiki/File:Alkene-2D-flat.png) | [Ethene-2D-flat.png](http://commons.wikimedia.org/wiki/File:Ethene-2D-flat.png)[Ethylene-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Ethylene-2D-skeletal.png)[Ethylene-3D-balls.png](http://commons.wikimedia.org/wiki/File:Ethylene-3D-balls.png)  [ethene](http://en.wikipedia.org/wiki/ethylene), C2H4 |
| alkynyl group | [alkyne](http://en.wikipedia.org/wiki/alkyne) | RC≡CR | [Alkyne-2D-flat.png](http://commons.wikimedia.org/wiki/File:Alkyne-2D-flat.png) | [Ethyne-2D-flat.png](http://commons.wikimedia.org/wiki/File:Ethyne-2D-flat.png)[Acetylene-2D-skeletal.svg](http://commons.wikimedia.org/wiki/File:Acetylene-2D-skeletal.svg)[Acetylene-3D-balls.png](http://commons.wikimedia.org/wiki/File:Acetylene-3D-balls.png)  [ethyne](http://en.wikipedia.org/wiki/acetylene), C2H2 |
| amide group | [amide](http://en.wikipedia.org/wiki/amide) | RCONH2 | [Amide-general.png](http://commons.wikimedia.org/wiki/File:Amide-general.png) | [Acetamide-2D-flat.png](http://commons.wikimedia.org/wiki/File:Acetamide-2D-flat.png)[Acetamide-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Acetamide-2D-skeletal.png)[Acetamide-3D-balls.png](http://commons.wikimedia.org/wiki/File:Acetamide-3D-balls.png)  [ethanamide](http://en.wikipedia.org/wiki/acetamide), CH3CONH2 |
| amino group | [amine](http://en.wikipedia.org/wiki/amine) | 1°: RNH2 2°: R2NH 3°: R3N | [Amine-2D-general.png](http://commons.wikimedia.org/wiki/File:Amine-2D-general.png) | [Ethylamine-2D-flat.png](http://commons.wikimedia.org/wiki/File:Ethylamine-2D-flat.png)[Ethylamine-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Ethylamine-2D-skeletal.png)[Ethylamine-3D-balls.png](http://commons.wikimedia.org/wiki/File:Ethylamine-3D-balls.png)  [ethylamine](http://en.wikipedia.org/wiki/ethylamine), C2H5NH2 |
|  | [alpha amino acid](http://en.wikibooks.org/wiki/A-level_Chemistry/OCR_%28Salters%29/Amino_acids) | H2CHRCOOH | [Alpha-amino-acid-2D-flat.png](http://commons.wikimedia.org/wiki/File:Alpha-amino-acid-2D-flat.png) | [Glycine-2D-flat.png](http://commons.wikimedia.org/wiki/File:Glycine-2D-flat.png)[Glycine-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Glycine-2D-skeletal.png)[Glycine-3D-balls.png](http://commons.wikimedia.org/wiki/File:Glycine-3D-balls.png)  [glycine (aminoethanoic acid)](http://en.wikipedia.org/wiki/glycine), (CH3CO)2O |
|  | [acid anhydride](http://en.wikipedia.org/wiki/acid_anhydride) | (RCO)2O | [Carboxylic-acid-anhydride.png](http://commons.wikimedia.org/wiki/File:Carboxylic-acid-anhydride.png) | [Acetic-anhydride-2D-flat.png](http://commons.wikimedia.org/wiki/File:Acetic-anhydride-2D-flat.png)[Acetic-anhydride-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Acetic-anhydride-2D-skeletal.png)[Acetic-anhydride-3D-balls.png](http://commons.wikimedia.org/wiki/File:Acetic-anhydride-3D-balls.png)  [ethanoic anhydride](http://en.wikipedia.org/wiki/acetic_anhydride), (CH3CO)2O |
| azo group | [azo compound](http://en.wikipedia.org/wiki/azo_compound) | RN2R | [Azo-group-2D-flat.png](http://commons.wikimedia.org/wiki/File:Azo-group-2D-flat.png) | [Azobenzene-circles-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Azobenzene-circles-2D-skeletal.png)[Azobenzene-trans-3D-balls.png](http://commons.wikimedia.org/wiki/File:Azobenzene-trans-3D-balls.png)  [azobenzene](http://en.wikipedia.org/wiki/azobenzene), C6H5N2C6H5 |
| carboxyl group | [carboxylic acid](http://en.wikipedia.org/wiki/carboxylic_acid) | RCOOH | [Carboxylic-acid.svg](http://commons.wikimedia.org/wiki/File:Carboxylic-acid.svg) | [Acetic-acid-2D-flat.png](http://commons.wikimedia.org/wiki/File:Acetic-acid-2D-flat.png)[Acetic-acid-2D-skeletal.svg](http://commons.wikimedia.org/wiki/File:Acetic-acid-2D-skeletal.svg)[Acetic-acid-3D-balls.png](http://commons.wikimedia.org/wiki/File:Acetic-acid-3D-balls.png)  [ethanoic acid](http://en.wikipedia.org/wiki/acetic_acid), CH3COOH |
| diazonium group | [diazonium salt](http://en.wikipedia.org/wiki/diazonium_salt) | [RN2]+ X− | [Diazonium-salt-2D.png](http://commons.wikimedia.org/wiki/File:Diazonium-salt-2D.png) | [Benzenediazonium-chloride-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Benzenediazonium-chloride-2D-skeletal.png)  benzenediazonium chloride, C6H5N2Cl |
| acyloxy group | [ester](http://en.wikipedia.org/wiki/ester) | RCOOR | [Ester-general.png](http://commons.wikimedia.org/wiki/File:Ester-general.png) | [Ethyl-acetate-2D-flat.png](http://commons.wikimedia.org/wiki/File:Ethyl-acetate-2D-flat.png)[Ethyl-acetate-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Ethyl-acetate-2D-skeletal.png)[Ethyl-acetate-3D-balls.png](http://commons.wikimedia.org/wiki/File:Ethyl-acetate-3D-balls.png)  [ethyl ethanoate](http://en.wikipedia.org/wiki/ethyl_acetate), CH3COOCH3 |
| alkoxy group | [ether](http://en.wikipedia.org/wiki/ether) | ROR | [Ether-(general).png](http://commons.wikimedia.org/wiki/File:Ether-%28general%29.png) | [Diethyl-ether-2D-flat.png](http://commons.wikimedia.org/wiki/File:Diethyl-ether-2D-flat.png)[Diethyl-ether-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Diethyl-ether-2D-skeletal.png)[Diethyl-ether-3D-balls.png](http://commons.wikimedia.org/wiki/File:Diethyl-ether-3D-balls.png)  [ethoxyethane](http://en.wikipedia.org/wiki/diethyl_ether), CH3OCH3 |
| halo group | [haloalkane](http://en.wikipedia.org/wiki/haloalkane) | RX | [Haloalkane-2D-flat.png](http://commons.wikimedia.org/wiki/File:Haloalkane-2D-flat.png) | [Chloroethane-2D-flat.png](http://commons.wikimedia.org/wiki/File:Chloroethane-2D-flat.png)[Chloroethane-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Chloroethane-2D-skeletal.png)[Chloroethane-3D-balls.png](http://commons.wikimedia.org/wiki/File:Chloroethane-3D-balls.png)  [chloroethane](http://en.wikipedia.org/wiki/chloroethane), C2H5Cl |
| carbonyl group | [ketone](http://en.wikipedia.org/wiki/ketone) | RCOR | [Ketone-general.png](http://commons.wikimedia.org/wiki/File:Ketone-general.png) | [Acetone-2D-flat.png](http://commons.wikimedia.org/wiki/File:Acetone-2D-flat.png)[Acetone-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Acetone-2D-skeletal.png)[Acetone-3D-balls.png](http://commons.wikimedia.org/wiki/File:Acetone-3D-balls.png)  [propanone](http://en.wikipedia.org/wiki/acetone), CH3COCH3 |
| cyano group | [nitrile](http://en.wikipedia.org/wiki/nitrile) | RCN | [Nitrile-group-2D.png](http://commons.wikimedia.org/wiki/File:Nitrile-group-2D.png) | [Acetonitrile-2D-flat.png](http://commons.wikimedia.org/wiki/File:Acetonitrile-2D-flat.png)[Acetonitrile-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Acetonitrile-2D-skeletal.png)[Acetonitrile-3D-balls.png](http://commons.wikimedia.org/wiki/File:Acetonitrile-3D-balls.png)  [ethanenitrile](http://en.wikipedia.org/wiki/acetonitrile), CH3CN |
| nitro group | [nitro compound](http://en.wikipedia.org/wiki/nitro_compound) | RNO2 | [Nitro-group.png](http://commons.wikimedia.org/wiki/File:Nitro-group.png) [Nitro-group-canonicals-2D.png](http://commons.wikimedia.org/wiki/File:Nitro-group-canonicals-2D.png) | [Nitroethane-2D-flat.png](http://commons.wikimedia.org/wiki/File:Nitroethane-2D-flat.png)[Nitroethane-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Nitroethane-2D-skeletal.png)[Nitroethane-3D-balls.png](http://commons.wikimedia.org/wiki/File:Nitroethane-3D-balls.png)  [nitroethane](http://en.wikipedia.org/wiki/nitroethane), C2H5NO2 |
| [phenyl group](http://en.wikipedia.org/wiki/phenyl_group) | [phenyl compound](http://en.wikipedia.org/wiki/phenyl_group) | C6H5R | [Phenyl-group-circle-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Phenyl-group-circle-2D-skeletal.png) [Phenyl-group-2D-flat.png](http://commons.wikimedia.org/wiki/File:Phenyl-group-2D-flat.png) |  |
| hydroxyl group | phenol | ArOH | [Alcohol-(general)-skeletal.png](http://commons.wikimedia.org/wiki/File:Alcohol-%28general%29-skeletal.png) | [Phenol-2D-flat.png](http://commons.wikimedia.org/wiki/File:Phenol-2D-flat.png)[Phenol-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Phenol-2D-skeletal.png)[Phenol-3D-balls.png](http://commons.wikimedia.org/wiki/File:Phenol-3D-balls.png)  [phenol](http://en.wikipedia.org/wiki/phenol), C6H5OH |
| sulfo group | [sulfonic acid](http://en.wikipedia.org/wiki/sulfonic_acid) | RSO2OH / RSO3H | [Sulfonic-acid.png](http://commons.wikimedia.org/wiki/File:Sulfonic-acid.png) | [Ethanesulfonic-acid-2D-flat.png](http://commons.wikimedia.org/wiki/File:Ethanesulfonic-acid-2D-flat.png)[Ethanesulfonic-acid-2D-skeletal.png](http://commons.wikimedia.org/wiki/File:Ethanesulfonic-acid-2D-skeletal.png)[Ethanesulfonic-acid-3D-balls.png](http://commons.wikimedia.org/wiki/File:Ethanesulfonic-acid-3D-balls.png)  ethanesulfonic acid, C2H5SO2OH |

**[**[**edit**](http://en.wikibooks.org/w/index.php?title=A-level_Chemistry/OCR_%28Salters%29/Functional_groups&action=edit&section=1)**] Cyclic compounds and intramolecula**