



# STRUCTURE TYPES

	Monatomic	Simple molecular	Giant covalent	Ionic	Metallic
<b>Substances</b>	Group 0 elements	Elements: H <sub>2</sub> O <sub>2</sub> N <sub>2</sub> F <sub>2</sub> Cl <sub>2</sub> Br <sub>2</sub> I <sub>2</sub> S <sub>8</sub> P <sub>4</sub> Compounds: non-metal with non-metal	<i>sometimes incorrectly called macromolecular</i> Elements: Si, diamond, graphite, graphene Compounds: SiO <sub>2</sub>	Compounds: metal with non-metal	Elements: metals
<b>What the structure is</b>	Individual atoms with very weak forces between them.	Lots of individual molecules with weak forces between the molecules.  (the atoms within molecules are joined by covalent bonds)	Lattice structure in which all atoms are joined together in a giant network by covalent bonds.	Lattice structure of positive and negative ions.  The ions are held together by the strong attraction between the + and - ions (this +/- attraction is known as ionic bonding, although it is just an electrostatic attractive force).	Lattice structure of metal atoms where the outer shell electrons from each atom are delocalised.  There is a strong attraction between the positive nucleus of the atoms and the cloud of negative delocalised electrons (this is known as metallic bonding)
<b>Bonding</b>					
<b>Solid</b>					
<b>Liquid</b>					
<b>Gas</b>					
<b>Formula (molecular)</b>		Gives number of atoms of each type in one molecule: e.g. glucose C <sub>6</sub> H <sub>12</sub> O <sub>6</sub> each molecule contains 6C, 12H and 6O atoms			
<b>Formula (empirical)</b>	Just the symbol e.g. Ar	Gives ratio of atoms in substance e.g. glucose CH <sub>2</sub> O ratio of C:H:O atoms is 1:2:1	Gives ratio of atoms in substance e.g. SiO <sub>2</sub> ratio of Si:O atoms is 1:2	Gives ratio of ions in substance: e.g. MgCl <sub>2</sub> ratio of Mg <sup>2+</sup> :Cl <sup>-</sup> ions is 1:2	Just the symbol e.g. Fe
<b>Melting and boiling points</b>					
	<i>Higher melting / boiling points occur when:</i>	<i>Higher melting / boiling points occur when:</i>	<i>Higher melting / boiling points occur when:</i>	<i>Higher melting / boiling points occur when:</i>	<i>Higher melting / boiling points occur when:</i>
<b>Conductivity</b>					
<b>Solubility (aq)</b>					