

Structures

Giant covalent (non-metals bonding together)

e.g. Graphite - has delocalised electrons therefore can conduct electricity.
is soft and slippery.

Diamond and Silicon dioxide - poor conductors, all electrons used in covalent bonding. Lots of strong bonds which require a lot of energy to break. They are insoluble and have a hard rigid structure.

Simple molecular

e.g. Hydrogen, chlorine - insoluble

strong bonds between atoms, weak intermolecular forces

can't conduct electricity - all electrons used in bonding, no charge.

Metallic (metals and alloys)

giant lattice of delocalised electrons - can easily conduct electricity

made of layers so is ductile and malleable.

Ionic (metals and non metals)

e.g. Sodium chloride, magnesium oxide.

forms a giant lattice structure, can conduct electricity when molten. When a solid, no delocalised electrons.

has a high melting/boiling point. is soluble in water.

Oxidation - loss of electrons

Reduction - gain of electrons