Properties of Molecular Compounds EXPLAINED!

The properties of molecular compounds are highly dependent on the polarity, size and shape of molecules. These three factors have a direct impact on the strength of intermolecular forces. Highly polar molecules will have very strong interactions with each other and can often behave very similarly to ionic compounds. Less polar or non-polar molecules tend to behave quite differently.

Property	Explanation
Solid, Liquid or Gas at room temperature	**Depends on polarity** **If polar, intermolecular forces between molecules hold particles together as liquids or solids.** **If non-polar or very weakly polar, weak intermolecular forces result in gases. Eg. Diatomic elements**
Variable M.P. and B.P.	**Depends on polarity** **The energy required to separate molecules depends on the strength of intermolecular forces.** **stronger intermolecular forces = more energy required = higher M.P. / B.P.**
Variable solubility	**Depends on polarity** **Polar solutes dissolve in polar solvents** **Non-polar solutes dissolve in non-polar solvents**
Poor electrical conductors	**Do not readily produce ions in solutions (no electrolytes)**
Highly variable properties	**Atoms can be linked in seemingly infinite combinations. Some are small and simple, others are very large with complex 3D shapes and distinct regions with different characteristics.**