

A SHORT SUMMARY OF FACTORS GOVERNING IONIC AND MOLECULAR SUBSTANCES

	IONIC SUBSTANCES	MOLECULAR SUBSTANCES
How is the substance formed	The atoms of a metal element TRANSFER the electrons in their outermost shell to the atoms of a non-metal element thus creating positively charged metal ions and negatively charged non-metal ions.	The atoms of two or more non-metal elements SHARE one or more pairs of bonding electrons.
What holds the substance together	<p>The electrostatic force of attraction between positively charged IONS and negatively charged IONS hold ionic substances together.</p> <p>These forces of attraction are called electrovalent or ionic bonds, and these bonds exist between EVERY ion and EVERY oppositely charged ion in the ionic substance viz. they are non- or omni-directional bonds, and there is a COLOSSAL number of electrovalent or ionic bonds inside an ionic substance.</p> <p>(Please note that since the phrase “a COLOSSAL number” is in the singular form, then the accompanying verb must be in the singular. Please always obey the rules of grammar and syntax.)</p>	<p>A) <u>Inside each molecule</u> Intra-molecular electrostatic forces of attraction exist between (i) positively charged protons in the nuclei of the bonded atoms and (ii) one or more pairs of negatively charged bonding electrons.</p> <p>These forces of attraction are called covalent bonds, and they are highly directional bonds.</p> <p>B) <u>Between the molecules</u> there are four inter-molecular forces of attraction (and we will learn about them). They are</p> <p>a) Hydrogen bonds b) van der Waals’ forces of attraction viz</p> <p>b1) Permanent dipole to Permanent dipole b2) Permanent dipole to Induced dipole, and b3) Instantaneous dipole to Induced dipole forces of attraction.</p>
What sort of bonding	<i>Electrovalent / ionic.</i>	<i>Covalent INSIDE the molecules, and “inter-molecular forces of attraction” BETWEEN molecules.</i>