

TYPE OF STRUCTURE & EXAMPLES	<p>IONIC (M-NM)</p> <p>Na₂O, Al₂O₃, NaCl, KCl, MgCl₂, CaCl₂, MgO</p> <p>* Exception AlCl₃ – properties suggest molecular covalent</p>	<p>METALLIC (M-M)</p> <p>Cu, Ag, Zn</p>	<p>COVALENT NETWORK (NM-NM)</p> <p>SiO₂, C (diamond), C (graphite)</p>	<p>COVALENT MOLECULAR (NM-NM)</p> <p>SO₃, PCl₃, SCl₂, H₂O, I₂, SiCl₄, S₈, CO₂</p>
PARTICLES & TYPE OF BOND	<p>+ CATIONS and - ANIONS</p> <p>IONIC BOND</p>	<p>ATOMS*</p> <p>*ions & delocalised electrons</p> <p>METALLIC BOND</p>	<p>ATOMS</p> <p>COVALENT BOND</p>	<p>MOLECULES</p> <p>WEAK INTERMOLECULAR FORCES BETWEEN MOLECULES (covalent bond within)</p>
ELECTRICAL CONDUCTIVITY	<p>IONS</p> <p>FREE TO MOVE WHEN MOLTEN OR AQUEOUS</p>	<p>DELOCALISED ELECTRONS</p> <p>FREE TO MOVE IN SOLID & LIQUID</p>	<p>NO CHARGED PARTICLES</p> <p>(ions or electrons) FREE TO MOVE – SO THESE SUBSTANCES DO NOT CONDUCT * Exception graphite / delocalised electrons between layers</p>	<p>NO CHARGED PARTICLES</p> <p>(ions or electrons) FREE TO MOVE – SO THESE SUBSTANCES DO NOT CONDUCT</p>
MPT & BPT	<p>HIGH</p> <p>STRONG IONIC BONDS</p>	<p>HIGH</p> <p>STRONG METALLIC BONDS</p>	<p>HIGH</p> <p>STRONG COVALENT BONDS</p>	<p>LOW – some sublime</p> <p>WEAK INTERMOLECULAR FORCES BETWEEN MOLECULES</p>
OTHER PROPERTIES YOU MIGHT BE ASKED TO ACCOUNT FOR	<p>BRITTLE SOLIDS</p> <p>If ions are “moved along” + will repel +, - repel -, and crystal breaks</p> <p>SOLUBILITY IN WATER (many are soluble)</p> <p>Attraction between polar water and the + and – ions, leading to hydrated ions</p>	<p>HARD</p> <p>Strong metallic bond</p> <p>MALLEABLE & DUCTILE</p> <p>Metallic bond (attraction between ions and delocalised electrons) is non-directional and will still operate even if the metal is deformed</p>	<p>HARD</p> <p>Diamond & SiO₂ – strong covalent bonds in 3D lattice</p> <p>*graphite is slippery/greasy – used as lubricant due to weak attractive forces between layers</p>	<p>SOLUBILITY – like dissolves Like</p> <p>E.g. Nonpolar I₂ dissolves in nonpolar cyclohexane</p> <p>Polar ethanol dissolves in polar water</p>