

CAIE Chemistry A-level

11: Group 17 Definitions

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Definitions and Concepts for CAIE Chemistry A-level Group 17

Disproportionation reaction: A reaction in which a species is both oxidised and reduced, seen as both an increase and a decrease in oxidation number for that species.

Intermolecular forces: Interactions between different molecules. Types of intermolecular forces including permanent dipole-dipole interactions, induced dipole-dipole interactions (these are also known as van der Waals forces) and hydrogen bonding.

Oxidation number: The charge of an ion or a theoretical charge of an atom in a covalently bonded compound assuming the bond becomes ionic.

Oxidising agent: Electron acceptors. The elements/compounds which accept electrons causing itself to be reduced by oxidising another element/compound.

Permanent dipole-dipole forces: When molecules with polar covalent bonds interact with dipoles in other molecules dipole-dipole intermolecular forces are produced between the molecules. These intermolecular forces are generally stronger than van der Waals forces but weaker than hydrogen bonding.

Reducing ability: Reducing ability is the ability of a substance to act as a reducing agent. The reducing ability, or reducing power, of the halides increases down the group. This is because to act as a reducing agent the halide needs to lose an electron. As you go down the group it is easier for a halide to lose an electron because the attraction from the outer electron and nucleus decreases due to increased shielding and an increasing ionic radius.

Reducing agent: A substance that can reduce another species by being oxidised.

Thermal stability: How easy/much energy does it take for a molecule to break down using heat.

Van der Waals: Also known as induced dipole-dipole, dispersion, and London forces, van der Waals forces exist between all molecules. They arise due to fluctuations of electron density. These fluctuations may temporarily result in an uneven electron distribution, producing an instantaneous dipole. This dipole can induce a dipole in another molecule, and so on.

Volatility: How easily a substance evaporates in standard conditions.

Water treatment: The addition of chlorine to water to kill bacteria. The risks associated with the use of chlorine to treat water are the hazards of toxic chlorine gas and the possible risks from the formation of chlorinated hydrocarbons.

