Metals and Their Uses Cheat Sheet

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Properties of Alloys and Their Uses

Alloys -> Mixture of two or more metals	Increased Strength: Alloys are usually stronger than pure metals, making them suitable for construction and manufacturing.
Improved Resistance to Corrosion: Many alloys, like stainless steel, resist rust and corrosion better than the base metal.	Enhanced Hardness: Alloys are often harder than the metals they are made from, which helps in making cutting tools and machinery.
Tailored Magnetic or Lightweight Properties: Certain alloys are used for their magnetic properties (like alnico) or light weight (like aluminum alloys in aircraft).	Better Heat and Electrical Properties: Some alloys are designed to have specific heat or electrical conductivity, like nichrome for heating elements.

Metal + Water

Metal + Water -> Metal Hydroxide + Hydrogen	Mg(s) + 2H2O(l) -> Mg(OH)2 (aq*) + H2 (g)

*Auqueous: Chemical substance that is in the form of a solution in water

Metal + Oxygen

Metal + Oxygen -> Metal Oxide	2Mg(s) + O2 (g) -> 2MgO(S)

Properties and Uses of Metals

Conductors of heat and electricity (copper, electrical wiring)	Malleable and Ductile (aluminum, airplanes and cans)
High melting points and are solid at room temperature, except mercury (iron, cooking pans)	Shiny (gold and silvers, jewelry and electronics)

Strong and Durable (iron and steel, buildings and machines)

Corrosion and Rusting

Rusting -> chemical reaction where iron reacts with oxygen and water to form a reddish-brown substance called rust. Occurs because of oxidation.	Corrosion -> Formation of compounds of metals due to oxidation reaction.
Prevent -> Painting/coating, Galvanization, Stainless steel, Powder coating	Factors Influencing -> High temperature, acidic PH, oxygen, high flow velocity

Aluminum & Titanium -> Form an oxide layer to be stronger (Does not weaken the iron structure)

Metal + Acids

Metal + Acid -> Salt + Hydrogen gas	Zn(s) + 2HCl(aq) -> ZnCl2(aq) + H2(g)
Hydrochloric Acid	Chloride
Sulfuric Acid	Sulfate
Nitric Acid	Nitrate

To obtain salt:
1. React metal with acid
2. Filter out excess metal
3. Heat the solution to evaporate water
4. Crystals of salt remain

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