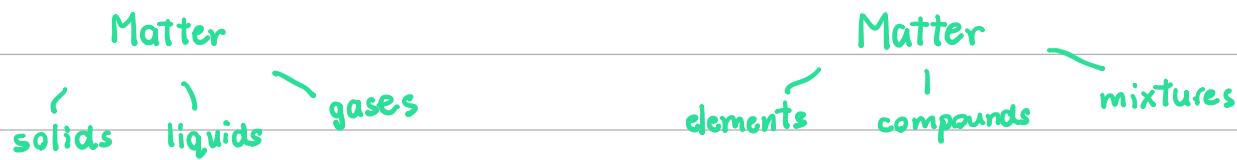


Chapter 3 : Exploring diversity of matter by its chemical composition

Overall :



3.2: What are the basic building blocks of matter and their chemically combined derivatives?

Elements

Elements : Pure substances that cannot be broken down into simpler substances by chemical means → e.g: strong heating / light / electricity
↳ the substance → alr simplest

Chemical means → get
chemical reaction

Chemical reaction: $A \rightarrow B + C$

↗ change of substance

(Sugar $\xrightarrow{\text{burnt}}$ water + carbon)
compound Groups

Periodic Table of Elements																		
		Group (Compound)																
		Group (Compound)																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	Li lithium	Be beryllium										B boron	C carbon	N nitrogen	O oxygen	F fluorine	Ne neon	
2	Na sodium	Mg magnesium										Al aluminum	Si silicon	P phosphorus	S sulfur	Cl chlorine	Ar argon	
3	K potassium	Ca calcium	Sc scandium	Ti titanium	V vanadium	Cr chromium	Mn manganese	Fe iron	Co cobalt	Ni nickel	Cu copper	Zn zinc	Ga gallium	Ge germanium	As arsenic	Se selenium	Br bromine	
4	Rb rubidium	Sr strontium	Y yttrium	Zr zirconium	Nb niobium	Mo molybdenum	Tc technetium	Ru ruthenium	Rh rhodium	Pd palladium	Ag silver	Cd cadmium	In indium	Sn tin	Sb antimony	Te tellurium	Kr krypton	
5	Cs cesium	Ba barium	lanthanoids		Hf hafnium	Ta tantalum	W tungsten	Re rhenium	Os osmium	Ir iridium	Pt platinum	Au gold	Hg mercury	Tl thallium	Pb lead	Bi bismuth	Po polonium	Xe xenon
6																		
7	Fr francium	Ra radium	actinoids		Rf rutherfordium	Db dubnium	Sg seaborgium	Bh bohrium	Hs hassium	Mt meitnerium	Ds darmstadtium	Rg roentgenium	Cn copernicium	Nh nihonium	Fm fermium	Lv livermorium	Ts tennessine	Og oganesson

↳ Periodic table of elements

* Fun fact : → metalloids (half metal)

→ SEC 1 → just follow zigzag line

Groups : columns (18个)

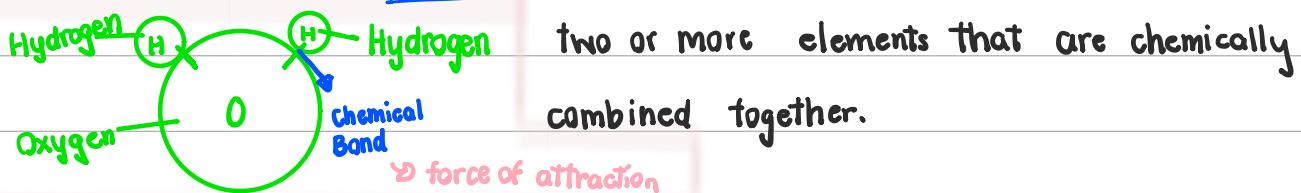
↳ same group → similar chemical properties

Periods : rows (7个)

↳ Bigger num → heavier / more dense

Compounds

Definition of COMPOUNDS : Compounds are pure substances that consists of



Examples of COMPOUNDS :

(Ones in PINK)

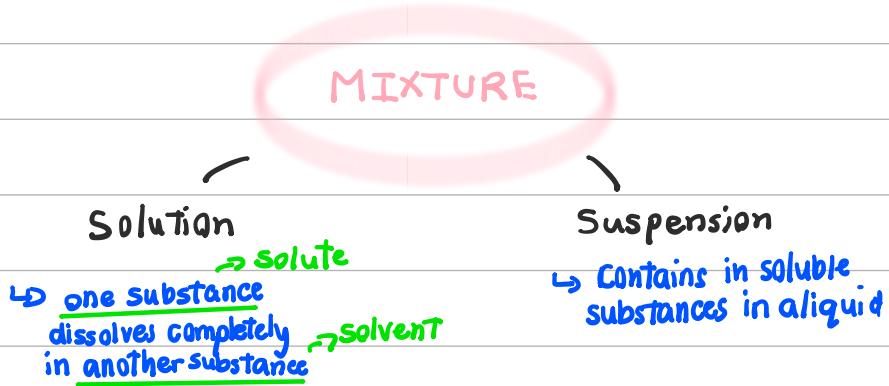
A type of gas

- Water (H_2O) → Hydrogen + Oxygen
- Salt (Sodium chloride) → Sodium + Chloride
- Ammonia → Nitrogen + Hydrogen
- Baking Soda (Sodium hydrogen carbonate)
→ Sodium + Hydrogen + Carbon + Oxygen
- Marble → Calcium + Carbon + Oxygen
- Glass → Silicon + Calcium + Carbon + Oxygen
- Plastics → Carbon + Hydrogen + Oxygen

Mixtures

- same properties as its constituents
- constituents × have fixed proportion
- can be separated using physical separation techniques

Solution & Suspension



Examples of solutions : • Sugar solution : Solute → sugar

Solvent → water

• Salt solution : Solute → salt

Solvent → water

• Mineral water : Solute → mineral

Solvent → water

• Soda water : Solute → carbon dioxide

Solvent → water

Examples of suspension : • Dirty water

• Wastewater

• calamine lotion

* Cannot dissolve : density > water → sink to bottom
density < water → float

★ End ★