

DESCRIPTIVE CHEMISTRY:

Hydrogen:	most abundant element in the universe Occurs in more compounds than any other element		
Lithium:	CO_3^{-2} , F^{-1} , OH^{-1} , PO_4^{-3} are less soluble in water than salts of other alkali metals Only alkali metal that forms a nitride Li_2CO_3 and LiOH decompose to form the oxide (other Group 1A are stable)		
Aluminum:	3 rd most abundant element Most abundant metal in the earth's crust		
Carbon:	Allotropes – diamond (hardest substance known), graphite, fullerenes, nanotubes		
Oxygen:	ranks first in abundance in the earth's crust		
Ozone:	O_3	Asbestos:	Ca * Mg silicate
Sulfur:	S_8	Flame tests:	Na - yellow Li - crimson K - purple Ba – yellowish-green Ca - reddish orange Sr – orangish-red Cu - green
Phosphorus:	P_4		
Dry ice:	carbon dioxide		
Bauxite:	mineral – source of aluminum		
Plaster of Paris:	$\text{CaSO}_4 * 1/2\text{H}_2\text{O}$	Bromine:	Fire extinguishers Fire retardants
Gypsum:	$\text{CaSO}_4 * 2\text{H}_2\text{O}$		
Slaked Lime:	$\text{Ca}(\text{OH})_2$	Ferromagnetism:	Fe, Co, Ni
Quicklime:	CaO	Group B1 metals: coinage metals:	Cu, Ag, Au
Chalk:	CaCO_3	Aqua regia:	1 part HNO_3 and 3 parts HCl
Limestone:	CaCO_3	Ag:	best electrical conductor
Marble:	CaCO_3	CuSO_4 :	pesticide against bacteria, algae, fungi
Dolomite:	$\text{CaCO}_3 * \text{MgCO}_3$	Liquid element:	Hg (silver liquid), Br (red liquid)
Hard Water:	contains Ca^{+2} , Mg^{+2} , and Fe^{+2}	Amalgams:	mercury containing alloy
Soaps:	fatty acids with reaction of NaOH	Hg:	vapor in fluorescent tubes
Stainless Steel:	contains Cr and Fe	F_2 :	yellowish gas
Galvanized steel:	contains Zn and Fe	I_2 :	purple solid; starch test – deep blue
Bronze:	90% Cu, 10% Sn, (Zn)	Cl_2 :	pale green gas
Pewter:	85% Sn, 7% Cu	Br_2 :	red liquid
Brass:	Cu, 20 – 45% Zn	KMnO_4 –	purple solution
Baking Soda:	NaHCO_3	Copper(II) –	blue
Caustic Soda:	NaOH	Dichromate –	orange
		Chromate –	yellow
Washing Soda:	Na_2CO_3 (soda ash)	$\text{Fe}^{+2}/\text{Fe}^{+3}$ –	orange or green

Precipitates:

PbI₂ – yellow
 AgOH → Ag₂O – brown
 AgI – yellow
 Ag₂CrO₄ – red-brown
 AgCl – white
 AgBr – cream (light yellow)
 Ag₂S – black

Gases:

Tests:

CO₂: limewater test – turns cloudy
 O₂: reignites a glowing splint
 H₂: pop when held over a flame

Others:

H₂S – rotten egg smell
 SO₂ – choking odor
 NO₂ – brown gas

Halogens:

salt forming

I₂ – essential for proper functioning thyroid gland. Iodine may lead to the development of goiter.Sand – SiO₂

Pyrex – borosilicate glass

HF – used to etch glass

Bleach – NaClO

Epsom salts: MgSO₄ * 7H₂OHaber process – production of ammonia: N₂ + 3H₂ → 2NH₃N₂O – nitrous oxide (laughing gas)

Phosphorus:

white phosphorus – very poisonous, ignites spontaneous at 35 – 45°C
 red phosphorus

Milk of Magnesia: Mg(OH)₂

Paramagnetic:

unpaired electrons – moves into a magnetic field

Diamagnetic: all paired electrons

Malachite:

an ore – source of copper

COMPLEXESCu(NH₃)₄⁺² – dark blueFe(SCN)⁺² – dark red

Iron

hematite – Fe₂O₃
 magnetite – Fe₃O₄
 pyrite – FeS₂ – “Fool’s Gold”