Exmouth Community College

KEYWORD	DEFINITION
Chemical reaction	Where chemicals are changed into different chemicals
Reactant(s)	The starting chemical(s) in a reaction
Product(s)	The end chemical(s) in a reaction
Physical properties	Can be observed or measured without changing the chemical
Malleable	Easily shaped
Ductile	Can be stretched into wires
Conductor	Allows heat or electricity to pass through
Reactivity	The tendency of a substance to undergo a chemical reaction
Oxidation	When a chemical reacts with oxygen in the air
Displacement	Ration where a more reactive element takes the place of a less reactive element in a compound

Oxidation Reactions

Metals and non-metals react with oxygen in the air forming oxides. Metal oxides (e.g. sodium oxide) are bases and non-metal oxides (e.g. sulphur dioxide) are acids.

Word equation: <u>element</u> + oxygen → <u>element</u> oxide Example: <u>*zinc*</u> + oxygen \rightarrow <u>*zinc*</u> oxide

zinc

Particle diagram:

KEY



800	
oxygen	zinc oxide

'н	1		KE	Y	FA	СТ	S		=	me	tal		= n	on n	neta	Ľ.	2 H
3 Li	4 Be				Iror	n, ni	ckel	and	d co	balt		5 B	⁶ C	⁷ N	° 0	F	10 N
11 Na	¹² Mg				are	ma	gnet	tic e	lem	ents	5	13 Al	14 Si	15 P	16 S	IT CI	18 A
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	K
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Rb	Sr	Y	Zr	Nb	Mo	Тс	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	1	X
55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	94	85	86
Cs	Ba	La	Hf	Та	W	Re	Os	Ir	Pt	Au	Hg	TI	Pb	Bi	Po	At	R
87	88	89	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Fg	Cn	Nh	FI	Mc	Lv	Ts	0

mercury and bromine are liquids

Physical properties of metals and non metals

PROPERTY	METAL	NON-METAL
State	Solid (except mercury which is a liquid)	Gas or solid (except bromine which is a liquid)
Appearance	Shiny	Dull
Conductivity	Good conductors of heat and electricity	Poor conductors or heat and electricity
Response to force	Malleable and ductile	Brittle

Metals and Acids

Metals react with	Acid	Salt formed			
acids forming salts and hydrogen. The	hydrochloric	metal chloride			
name of the salt	sulphuric	metal sulphate			
he acid used	nitric	<u>metal</u> nitrate			
<u>metal</u> + ac	cid → salt +	hydrogen			
<u>lithium</u> + hydrocl acio	hloric → <u>lithium</u> d chlorid	<u>ı</u> + hydrogen e			
<u>lithium</u> + sulph acio	uric → <u>lithium</u> d sulphate	+ hydrogen			

REACTIVITY SERIES

	ELEMENT	Reaction with oxygen	Reaction With dilute acid						
	Potassium	React with	explode						
	Sodium	oxygen in the air at							
	Lithium	room							
	Calcium	lemperature	Bubbles,						
ive	Magnesium	React with	give off hydrogen,						
act	Aluminium	oxygen in the air when	form a salt						
e e	Zinc	heated							
Jor	Iron								
2	Tin		Slow reaction						
	Lead		with warm acid						
	Hydrogen		No reaction						
	Copper								
	Silver								
	Gold	No reaction							
D	isplacemen	t Reactions							
Th of re <u>z</u>	This is when a more reactive <u>metal</u> takes the place of a less reactive <u>metal</u> in a compound. If the less reactive <u>metal</u> is by itself, no reaction takes place. $\underline{zinc} + \underline{lithium}$ no reaction as <u>zinc</u> is less reactive then lithium								
In a i	In this example <u>calcium</u> is more reactive than <u>lithium</u> a reaction takes place – the metals 'swap' <u>zinc</u> + <u>copper</u> \rightarrow <u>zinc</u> + <u>copper</u>								
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HT2 Chemistry / Heavy Metals ∞ Year

Exmouth Community College

The periodic table is arranged in rows, called periods and columns, called groups	s.
Groups contain elements with similar chemical properties	

Keyword	Definitio	n		Group 1 – Alkali Metals			1	0 2	0 3 0 4 0 6 0 7 0 0		
Periodic Table	A tabular elements	representation of all I in order based on ato	known omic number	Group 1 metals are very with a knife. They have v	soft metals which can rery low melting and bo	be cut biling Peri	riod 1	Group	Group Group Group Group Group		
Atomic Number	The num atom. Als	ber or protons in the r so called the proton nu	nucleus of an umber	points and are very react metals. The elements be go down Group 1.	s and are very reactive compared with other Is. The elements become more reactive as you by m Group 1.						
Periods	A horizo	ntal row in the periodic	c table	When the Group 1 metal	Vhen the Group 1 metals react in water they roduce a metal hydroxide and hydrogen gas Period 4 K Ca Sc Ti V Cr Min Fe Co Ni Cu Zn Ga Ge As .g. .ithium + Water Lithium Hydroxide + Hydrogen Period 7 Fr Ba La Hf Ta W Re Si						
Groups	A vertica containir propertie	l column in the period g elements with simila	ic table ar chemical	e.g. Lithium + Water Lithiu							
Element	A substa	nce made of only one	type of atom	Group 2 – Alkali Earth M Group 2 metals are react	/letals ive. but less reactive th	nan Group 1	10	Ce Pr Nd Pm Sm Eu Gd 90 91 92 93 94 95 96 Th Pa U Np Pu Am Cm	Tb Dy Ho Er Tm Yb Lu 97 86 98 100 101 102 103 Bk Cf Es Fm Md No Lr		
Compound	A substa have che	nce where two or mor mically joined togethe	e elements er	elements. Group 2 metals react with	n acids to produce salt	and		Group 7 – The Haloge	ns		
Mixture	Two or n together compour	nore substances that a The substances can nds or both	are not joined be elements,	Hydrogen: The name of the Hydrochloric acid – chlor Sulphuric acid – sulphat Nitric acid – nitrate	Group 7 elements beco when you move down tl be shown as a displace	come less reactive n the group. This can cement reaction.					
Reactive	The tend chemical	ency of a substance to reaction	o undergo a	e.g. Magnesium + Hydrochloric - Acid	→ Magnesium + Hy Chloride	drogen	Group 0 – The Noble Gases				
Further Reading: https://www.bbc.com/bitesize/guides/z3vwxnb/revision/5 https://www.bbc.com/bitesize/guides/z84wjxs/revision/1				Acid Acid Magnesium + Nitric Acid	te + Hydrogen	b	Group 0 elements are not reactive . This is because the atoms have full outer shells.				
						wii ale gioup	1		1		
Grou	up 1	Group 2	Group 3	Group 4	Group 5	Group	6	Group 7	Group 8		

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Lithium – Li Sodium – Na Potassium – K	Beryllium – Be Magnesium – Mg Calcium – Ca	Boron – B Aluminium – Al Gallium – Ga	Carbon – C Silicon – Si Germanium – Ge	Nitrogen – N Phosphorus – P Arsenic – As	Oxygen – O Sulphur – S Selenium – S	Fluorine – F Chlorine – Cl Bromine – Br	Helium – He Neon – Ne Argon – Ar
×	Be	В	C		***	× × × ×	***