**Chemical reactions – Revision notes**

***Elements and the periodic table***

* Elements are the building blocks of chemistry.
* Every element contains only one type of atom
* Each element contains atoms different to every other element
* Elements are arranged in the Periodic Table of elements.
* Element are arranged in the table in order of their atomic number
* Elements in different groups (columns) have different properties.
* Elements are often split into the groups metals and non-metals.
* Metals are strong, sonorous (ring), malleable (can be bent into shape) and are good conductors of heat and electricity.

The table contains information about each element –



Atomic mass

 Symbol

Atomic number

***Atoms***

* Atoms are the units that elements are built from
* Atoms are so tiny that they cannot be seen even with powerful microscopes
* The atoms of each element are different to each other, but have a similar structure.

The parts of the atom are –

* The atomic number is the number of protons in the atom
* The number of electrons is always the same as the number of protons so that the charges balance
* The atomic mass is the number of heavy particles ; protons + neutrons

***Reactivity of metals***

* Some metals react with water. Bubbles of hydrogen gas are released in this reaction. Heat is also produced.
* The more bubbles you see, the bigger the reaction.
* The metals in groups I and II can be arranged in order of reactivity.

|  |  |
| --- | --- |
| **Metal** | **Reaction** |
| Caesium | Explodes (not allowed to do!) |
| Potassium | Made so much gas it burned |
| Sodium | Made gas; zipped around |
| Lithium | Made gas; zipped around |
| Calcium | Produced bubbles of gas |
| Magnesium | Made bubbles on its surface |
| Zinc | No reaction |

This order means that –

* Metals get more reactive as you go down the periodic table.
* Metals get less reactive as you move across the table
* Most metals towards the right of the table (copper, gold) are not reactive at all

***Elements and compounds***

* Elements are the building blocks of chemistry
* The atoms of elements can be joined together to form compounds
* Once the atoms are joined in a compound, they are difficult to separate.
* Reactions are written as chemical equations – (element + element -> compound)

Magnesium + oxygen -> magnesium oxide

Iron + sulphur -> iron sulphide

Copper + chlorine -> copper chloride

* Energy can be used to break the compound back into its elements

Copper chloride -> copper + chlorine

(compounds) (elements)

***Naming compounds***

The rules for naming compounds are –

* The name of any metal comes first
* A name ending in ‘...ide’ means that the compound contains two elements
* A name ending in ‘...ate’ means that the compound contains three elements and one is oxygen. ‘Oxygen’ does not show up in the name; the ‘ate’ is the only clue it is there
* You should be able to give the name of the compound formed when different elements combine and tell which elements are present in any simple compound

***Gas tests***

The chemical reactions they take part in can be used to identify gases in the air.

* Relights a glowing splint = oxygen
* Burns with a ‘pop’ = hydrogen (though there is no hydrogen in air!)
* Turns lime water cloudy = carbon dioxide (CO2)
* No reaction = (likely to be) nitrogen

***Separating mixtures***

* Mixtures can be separated more easily than compounds
* The technique used depends on the properties of the substances
* Iron can be separated by sulphur by a magnet.
* Some liquids can be separated by differences in their boiling points
* This is distillation