Edexcel IGCSE Chemistry

Topic 2: Inorganic chemistry

Group 7 (halogens) – chlorine, bromine and iodine

Notes

2.5 know the colours, physical states (at room temperature) and trends in physical properties of these elements

- Chlorine is a yellow-green gas
- Bromine is a red-brown liquid
- Iodine is a purple solid
- There is a trend in state from gas to liquid to solid down the group

2.6 use knowledge of trends in Group 7 to predict the properties of other halogens

- There is a trend in state from gas to liquid to solid down the group
- this is because the melting and boiling points increase as you go down the group
- from this, you can predict that any halogens above chlorine will be gases (their boiling points will be even lower), and any below iodine will be solids (their melting points will be even greater)

2.7 understand how displacement reactions involving halogens and halides provide evidence for the trend in reactivity in Group 7

- A more reactive halogen can displace a less reactive in an aqueous solution of its salt.
- E.g. Chlorine will displace bromine if you bubble the gas through a solution of potassium bromide:

  Chlorine + Potassium Bromide → Potassium Chloride + Bromine
- chlorine will displace bromine and iodine
- bromine will displace iodine but not chlorine
- iodine can replace neither chlorine or iodine

- This happens because as you go down the group, the reactivity of halogens decreases.

2.8 (chemistry only) explain the trend in reactivity in Group 7 in terms of electronic configurations

- The halogens react by gaining an electron in their outer shell, as you go down the group:
    - outer shell becomes further from the nucleus
    - electron shielding increases
    - attraction decreases between nucleus and outer electrons
    - electrons are gained less easily
    - halogens become less reactive