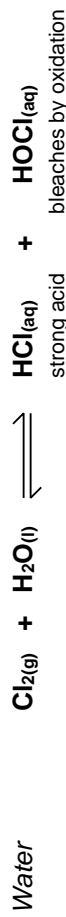


**CHLORINE - Reactions**



**Examples of DISPROPORTIONATION**

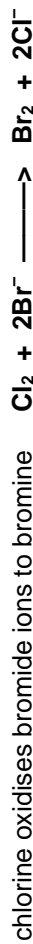
**SIMILARITIES** within the Group

- Non-metals
- Similar electronic configuration ...  $ns^2 np^5$
- Form negative ions
- Diatomic covalent molecules

**TRENDS** down the Group

**Boiling point** INCREASES - Increased Van der Waals forces  
**Electronegativity** DECREASES - Increased shielding and radius  
**Oxidising power** DECREASES - Increased shielding and radius

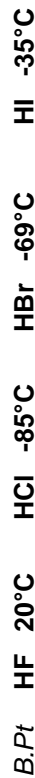
**OXIDISING ABILITY - DISPLACEMENT REACTIONS**



*Trend Reason* Easier to remove electrons from larger ions

**HYDROGEN HALIDES**

At RTP all are colourless gases, EXCEPT HF is a colourless liquid



HF value is much higher than expected (**hydrogen bonding**)

**TESTING FOR HALIDES**

SILVER NITRATE Ion	Ppt	Formula	dil. NH <sub>3</sub>	conc. NH <sub>3</sub>
Cl <sup>-</sup>	white	AgCl	soluble	-
Br <sup>-</sup>	cream	AgBr	insoluble	soluble
I <sup>-</sup>	yellow	AgI	insoluble	insoluble

**CONCENTRATED SULPHURIC ACID**

Halide	Observation(s)	Product	O.S.	Reaction type
NaCl	misty fumes	HCl	-1	Displacement of Cl <sup>-</sup>
NaBr	misty fumes brown vapour colourless gas	HBr Br <sub>2</sub> SO <sub>2</sub>	-1 0 +4	Displacement of Br <sup>-</sup> Oxidation of Br <sup>-</sup> Reduction of H <sub>2</sub> SO <sub>4</sub>
NaI	misty fumes purple vapour colourless gas yellow solid bad egg smell	HI I <sub>2</sub> SO <sub>2</sub> S H <sub>2</sub> S	-1 0 +4 0 -2	Displacement of Cl <sup>-</sup> Oxidation of I <sup>-</sup> Reduction of H <sub>2</sub> SO <sub>4</sub> " "