

Marks
4

- F₂ and Cl₂ are gases at room temperature, Br₂ is a liquid, and I₂ is a solid. Explain why the melting points and boiling points of the halogens increase going down the group.

Going down the group, the atoms get bigger - they have more electrons and these occupy orbitals of higher n values which are larger and more diffuse.

Hence, they have bigger and more polarisable electron clouds. Dispersion forces depend on the polarizability of the electron cloud and therefore increase going down the group. The melting and boiling points increase accordingly.