

Marks
2

- Explain why HOCl is a stronger Brønsted acid than HOBr but HCl is a weaker acid than HBr.

In Group 17 oxyacids, electron density is drawn away from the O atom as the electronegativity of the halogen increases. This in turn draws electron density away from the O–H bond and weakens it. The weaker the O–H bond, the stronger the acid. Cl is more electronegative than Br so HOCl is stronger acid than HOBr.

In binary acids such as HBr and HCl, the H–Br bond is longer than the H–Cl bond as Br is larger than Cl. The H–Br bond is therefore weaker than the H–Cl bond and HBr is thus a stronger acid than HCl.