



OXIDISING POWER OF HALOGENS

No organic solvent used:

Halide (aq)	Halogen (aq)			
	Cl ₂ (aq)	Br ₂ (aq)	I ₂ (aq)	
Cl ⁻ (aq)		No reaction	No reaction	Observation
				Ionic equation
Br ⁻ (aq)	Yellow solution forms		No reaction	Observation
	$\text{Cl}_2 + 2 \text{Br}^- \rightarrow 2 \text{Cl}^- + \text{Br}_2$			Ionic equation
I ⁻ (aq)	Brown solution forms	Brown solution forms		Observation
	$\text{Cl}_2 + 2 \text{I}^- \rightarrow 2 \text{Cl}^- + \text{I}_2$	$\text{Br}_2 + 2 \text{I}^- \rightarrow 2 \text{Br}^- + \text{I}_2$		Ionic equation

Oxidising power:

Strongest chlorine
 bromine
Weakest iodine

Explanation

- Halogen atom gains an electron when it oxidises the halide ion
- The smaller the halogen atom, the easier it is to gain an electron as it is smaller and has less shielding

Cl

Br

I

Organic solvent used:

Halide (aq)	Halogen (aq)			
	Cl ₂ (aq)	Br ₂ (aq)	I ₂ (aq)	
Cl ⁻ (aq)		No reaction	No reaction	Observation
				Ionic equation
Br ⁻ (aq)	Yellow solution forms in organic layer		No reaction	Observation
	$\text{Cl}_2 + 2 \text{Br}^- \rightarrow 2 \text{Cl}^- + \text{Br}_2$			Ionic equation
I ⁻ (aq)	Purple solution forms in organic layer	Purple solution forms in organic layer		Observation
	$\text{Cl}_2 + 2 \text{I}^- \rightarrow 2 \text{Cl}^- + \text{I}_2$	$\text{Br}_2 + 2 \text{I}^- \rightarrow 2 \text{Br}^- + \text{I}_2$		Ionic equation

Oxidising power:

Strongest chlorine
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- Halogen atom gains an electron when it oxidises the halide ion
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