OCR (B) Chemistry A-Level

ES3 - Inorganic Chemistry and the Periodic Table

Flashcards

What does chlorine look like under standard conditions?

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Chlorine is a pale green gas under standard conditions.

What does bromine look like under standard conditions?

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Bromine is a red-brown liquid under standard conditions.

What does iodine look like under standard conditions?

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Iodine is a violet solid under standard conditions.

Why does the reactivity of halogens decrease down the group?

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As we move down group 7 the number of electron shells increase, this increases the shielding from the nucleus as well as the atomic radius. Both of these factors decrease the nuclear attraction of outer electrons, making it harder for the halogen to gain electrons.

Why does the volatility of the halogens decrease down the group?

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Halogens only have intermolecular london forces between their molecules. As we move down the group the number of electrons in the halogen molecule increases, thus the london forces between the molecules become stronger, taking more energy to break.

Why are halogens more soluble in cyclohexane than in water?

Why are halogens more soluble in cyclohexane than water?

Halogen molecules are non-polar, so they do not dissolve very well in polar solvents like water, but they will dissolve readily in non-polar solvents like cyclohexane.

What are the results of the halogens' reactions with Ag^+ ions?

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Halogen	Chlorine	Bromine	Iodine
Reaction with Ag^+	White precipitate	Cream precipitate	Yellow precipitate

What are the solubilities of silver halide precipitates in ammonia?

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- Silver chloride: soluble in dilute ammonia.
- Silver bromide: soluble only in concentrated ammonia.
- Silver iodide: insoluble in dilute and concentrated ammonia.

How do halogens react with halide ions?

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Less reactive halide ions are displaced. Chlorine will displace bromide and iodide ions, bromine will only displace iodide ions and iodine will not displace halide ions.

$$2Br^-_{(aq)} + Cl_{2(g)} \Longrightarrow Br_{2\ (l)} + 2Cl^-_{(aq)}$$

How are hydrogen halides prepared?

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$$X^- + H_3PO_4 \Rightarrow HX + H_2PO_4^-$$

Where X is a halogen.

How does HBr react with H_2SO_4?

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$$2HBr + H_2SO_4 \longrightarrow SO_2 + Br_2$$

Why is HF a weaker acid than HCl?

Why is HF a weaker acid than HCl?

The F^- ion forms ionic bonds with the H_3O^+ ions in solution, which means there is an equilibrium between the bound and unbound forms of the acid.

$$H_3O^+ F^- \rightleftharpoons H_3O^+ + F^-$$

What are some uses of chlorine?

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- Sterilisation of water.
- Bleaching for use in the paper or textiles industry.

What are some risks associated with the storage and transport of chlorine?

What are some risks associated with the storage and transport of chlorine?

- Chlorine is extremely toxic and can cause irreversible lung damage and eye damage upon exposure.
- Some chlorine compounds, such as those made when exposed to water, are carcinogenic.