

OCR (A) Chemistry A-level

Topic 3.1.3 - The Halogens

Flashcards

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What group elements are referred to as halogens?



What group elements are referred to as halogens?

Group 7



List 2 properties of halogens



List 2 properties of halogens

- Low melting and boiling points
- Exist as diatomic molecules



What is the trend in boiling point down group 7? Why?



What is the trend in boiling point down group 7? Why?

Increases down the group because:

-size of atom increases as more occupied electron shells →
stronger London forces of attraction between molecules, take
more energy to break



What is the trend in reactivity
down group 7? Why?



What is the trend in reactivity down group 7? Why?

Reactivity decreases because:

- Atomic radius increases
- Electron shielding increases
- Ability to gain an electron and form 1- ions decreases



What is the trend in oxidising ability down the group? Why?



What is the trend in oxidising ability down the group? Why?

Decreases down group (Cl strongest, I weakest)

This is because Cl has the fewest occupied electron shells, greatest force of attraction between outer electrons and nucleus and thus is the easiest to gain electrons and be reduced → best oxidising agent



What is the trend in reducing ability of the halides down the group? Why?



What is the trend in reducing ability of the halides down the group?
Why?

Increases down the group (Cl^- weakest, I^- strongest)

This is because I^- has the most occupied electron shell so outer electrons are further from the nucleus, weakest force of attraction between outer electrons and positive charge of nucleus and thus is the easiest to be oxidised and lose electrons → best reducing agent



When a more reactive halogen displaces a less reactive halide, what is the reaction called?



When a more reactive halogen displaces a less reactive halide, what is the reaction called?

Displacement reaction



What is the colour of chlorine
in water?



What is the colour of chlorine in water?

Pale green



What is the colour of bromine
in water?



What is the colour of bromine in water?

Orange



What is the colour of iodine in water?



What is the colour of iodine in water?

Brown



What is the colour of chlorine
in cyclohexane?



What is the colour of chlorine in cyclohexane?

Pale green



What is the colour of bromine
in cyclohexane?



What is the colour of bromine in cyclohexane?

Orange



What is the colour of iodine in cyclohexane?



What is the colour of iodine in cyclohexane?

Violet



Out of the 3 halides Cl^- , Br^- & I^- , which one of these can be oxidised by chlorine?



Out of the 3 halides Cl^- , Br^- & I^- , which one of these can be oxidised by chlorine?

Br^- & I^- ions



Write the equation for chlorine
oxidising bromide ions



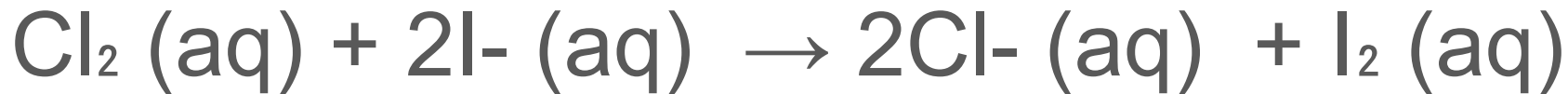
Write the equation for chlorine oxidising bromide ions



Write the equation for Cl_2
oxidising 2I^-



Write the equation for Cl_2 oxidising 2I^-



Out of the 3 halides Cl^- , Br^- & I^- , which one of these can be oxidised by bromine?



Out of the 3 halides Cl^- , Br^- & I^- , which one of these can be oxidised by bromine?

I^- ions



Write the equation for bromine
oxidising iodide ions



Write the equation for bromine oxidising iodide ions



Out of the 3 halides Cl^- , Br^- & I^- , which one of these can be oxidised by iodine?



Out of the 3 halides Cl^- , Br^- & I^- , which one of these can be oxidised by iodine?

Does not oxidise Cl^- or Br^-



Define disproportionation



Define disproportionation

The oxidation and reduction of the same element in a redox reaction



What is the equation for the reaction of Cl_2 with water?



What is the equation for the reaction of Cl_2 with water?



What type of reaction is the
reaction of chlorine with
water?



What type of reaction is the reaction of chlorine with water?

Disproportionation; chlorine is both oxidised and reduced



Why is chlorine added to drinking water?



Why is chlorine added to drinking water?

It kills the bacteria in the water and makes it safer to drink



What are the two forms of the chlorate ion?



What are the two forms of the chlorate ion?

ClO^- is chlorate (I)

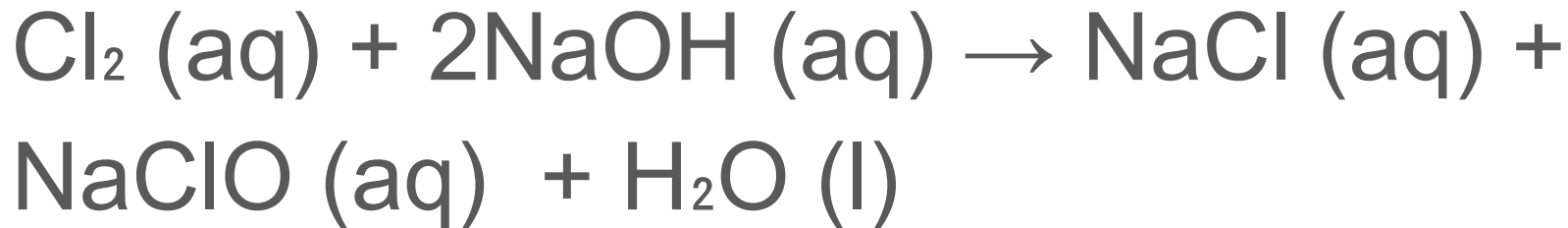
ClO_3^- is chlorate (V)



What is the equation for forming bleach?



What is the equation for forming bleach?



NaClO is bleach

