The reversible reaction between two cobalt species Transcript

Cobalt chloride can exist as a hydrated, pink, or anhydrous, blue, compound.

The process for heating a hydrated salt is called dehydration.

Dehydrating cobalt chloride results in a colour change that can be reversed.

This reversible reaction can be observed in the laboratory.

First, hydrated cobalt chloride is put into an evaporating dish.

This cobalt chloride is then heated gently using a Bunsen burner.

As the solid is heated a colour change is observed from pink to blue. As the water evaporates from the solid it appears wet.

The evaporating dish is then cooled in a desiccator for five minutes. The desiccator is used to prevent the cobalt chloride absorbing moisture from the atmosphere.

Once cooled, the reverse reaction can be observed. To monitor the reaction a thermocouple or thermometer can be added to the evaporating dish.

To reverse the reaction, water is added to the solid, which then appears pink.

The addition of water causes the temperature to rise. Therefore, this reaction is exothermic. The dehydration process must therefore be endothermic.

This reaction exists as an equilibrium.

Many of the reactions we observe are forward reactions. This means they move from reactants, left, to products, right.

In a reversible reaction the forward reaction takes place. After some product has been made the reverse reaction also occurs.

When the rate of the forward reaction equals the rate of the reverse reaction we call this equilibrium. This is the correct symbol to use for an equilibrium reaction.

In the cobalt chloride example, this reaction is useful as it is used as definitive test for the presence of water.