



- 1 Many people take iron tablets due to iron deficiency. Some of these tablets contain the soluble salt $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$. This salt can be made from reaction of an excess of iron(II) oxide with an acid. In this reaction,
- Identify the acid for this reaction. **sulfuric acid**
 - Why is an excess of iron(II) oxide used? **to ensure that all the sulfuric acid is used up**
 - Why is it important that there is no left over when the salt is made?
do not want there to be any sulfuric acid in the tablets that the patient is taking
 - How is the excess iron(II) oxide removed from the reaction mixture? **remove by filtration**
 - How can crystals of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ be formed from the solution of iron(II) sulfate?
**heat to evaporate some water to give a hot saturated solution
crystals will form as the solution cools**
 - Explain why this crystallisation process works.
**the salt becomes less soluble in the water as the solution cools
some cannot remain dissolved and so crystallises out**
 - Is the reaction of iron(II) oxide with the acid an acid-base or a redox reaction? Explain your answer.
acid-base as protons (H^+) are transferred
- 2 Outline how the anhydrous salt calcium chloride could be made from calcium metal.
- add excess calcium
to hydrochloric acid
you can tell the calcium is in excess due to left over calcium that does not produce bubbles of gas
filter off the excess calcium
boil off all the water**