Iron: a fiery future

Education in Chemistry
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Answers

1. sodium + silver(I) chloride → sodium chloride + silver

   $Na + Ag^+Cl^- \rightarrow Na^+Cl^- + Ag$

   Explanation: *sodium is more reactive than silver*

   Metal that is **oxidised**: *sodium* $Na - 1e^- \rightarrow Na^+$

   Metal that is **reduced**: *silver* $Ag^+ + 1e^- \rightarrow Ag$

2. magnesium + iron(II) chloride → magnesium(II) chloride + iron

   $Mg + Fe^{2+}(Cl^-)_2 \rightarrow Mg^{2+}(Cl^-)_2 + Fe$

   Explanation: *magnesium is more reactive than iron*

   Metal that is **oxidised**: *magnesium* $Mg - 2e^- \rightarrow Mg^{2+}$

   Metal that is **reduced**: *iron* $Fe^{2+} + 2e^- \rightarrow Fe$

3. zinc + copper(II) bromide → zinc(II) bromide + copper

   $Zn + Cu^{2+}(Br^-)_2 \rightarrow Zn^{2+}(Br^-)_2 + Cu$

   Explanation: *zinc is more reactive than copper*

   Metal that is **oxidised**: *zinc* $Zn - 2e^- \rightarrow Zn^{2+}$

   Metal that is **reduced**: *copper* $Cu^{2+} + 2e^- \rightarrow Cu$

4. zinc + lead(II) iodide → zinc(II) iodide + lead

   Symbol equation: $Zn + Pb^{2+}(I^-)_2 \rightarrow Zn^{2+}(I^-)_2 + Pb$

   Explanation: *zinc is more reactive than lead*

   Metal that is **oxidised**: *zinc* $Zn - 2e^- \rightarrow Zn^{2+}$

   Metal that is **reduced**: *lead* $Pb^{2+} + 2e^- \rightarrow Pb$

5. aluminium + copper(II) nitrate → aluminium nitrate + copper

   Symbol equation: $2Al + 3Cu^{2+}(NO_3^-)_2 \rightarrow 2Al^{3+}(NO_3^-)_3 + 3Cu$

   Explanation: *aluminium is more reactive than copper*

   Metal that is **oxidised**: *aluminium* $Al - 3e^- \rightarrow Al^{3+}$

   Metal that is **reduced**: *copper* $Cu^{2+} + 2e^- \rightarrow Cu$

What do you notice about the more reactive metal in all the examples above?

The more reactive metal is always oxidised. They have a greater tendency to lose electrons and become positive ions.