

Rusting

- Rusting of iron is a chemical process that occurs when iron is exposed to _____ and _____, and undergoes a _____ reaction.
- Corrosion of metal is a _____ reaction where the _____ is oxidised spontaneously when the metal atoms _____ electrons to form metal ions.
- _____ electropositive the metal is, the easier it is for the metal to corrode. For example, corrosion of iron, Fe is faster than copper, Cu.

Iron rusting as a redox reaction

Drag the word in the box to the diagram

$\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$ (rust)

Water droplets

anode

cathode

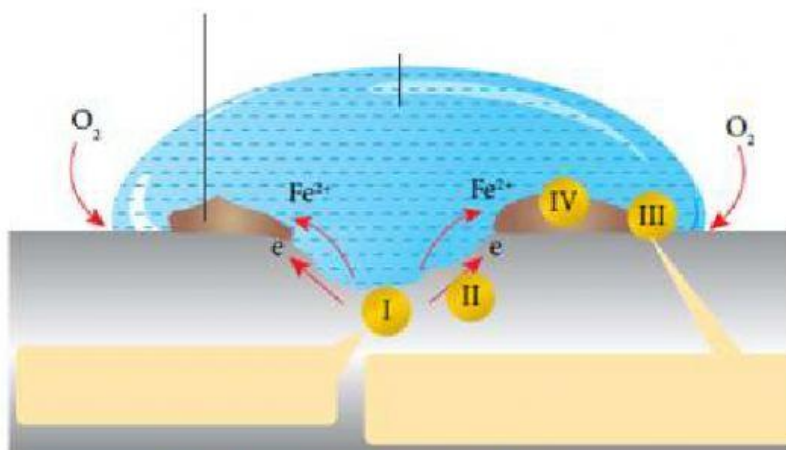


Figure 1.41 Mechanism of rusting

- Rusting of iron occurs with the presence of _____ and _____
- The surface of the iron in the middle of the water droplet where the concentration of oxygen is low serves as the _____ (negative terminal). Iron atom, _____ electrons and undergoes _____
- Electrons flow to the _____ of the water droplet where the concentration of oxygen is _____. The iron, Fe surface at that part becomes the _____ (positive terminal), where _____ occurs.
- Oxygen, O_2 that dissolves in water _____ electrons and undergoes _____ to form hydroxide ion, OH^- .
- The iron(II) ion, Fe^{2+} produced reacts with hydroxide ion, OH^- to form iron(II) hydroxide, $Fe(OH)_2$.
- Rusting of iron occurs faster in the presence of _____ or _____
- When iron comes into contact with a _____ metal such as zinc, Zn, rusting of iron _____. Zinc atoms, Zn release electrons more easily than iron, Fe. Zinc, Zn _____ and undergoes _____.
- When iron comes into contact with less electropositive metals, such as lead, the rusting of iron becomes _____. Iron atoms, Fe _____ electrons, forming iron(II) ions, Fe^{2+} . Thus, iron rusts and is _____.

Drag the sentence in the box into the diagram below:

rusting iron speed up when
into contact with this metal

rusting iron slows down when
into contact with this metal

more tendency to
release electron

