6 Reversible reactions and redox – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	Write it 3 times (English)		
reversible			
oxidation			
reduction			
redox			
reversible reaction			
hydrated			
anhydrous			
closed system			
equilibrium			
oxidising agent			
reducing agent			

Recall

Some reactions can go **both ways** – they are **reversible** . And **oxidation** and **reduction** always happen together in a **redox** reaction.

- A reversible reaction is shown by ⇌.
- "Redox" is short for reduction–oxidation.

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Nothing here is hard – it just adds the right words.

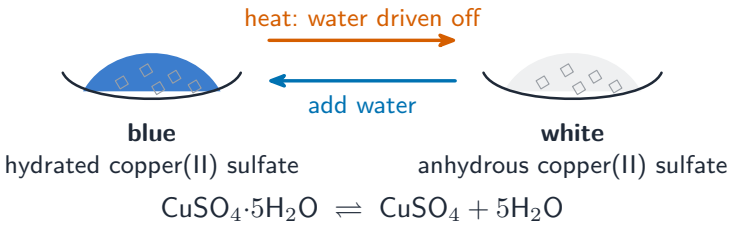
New ideas

Read these first, then do the Practice.

1 Reversible reactions

A **reversible reaction** can go forwards and backwards. A good example:

- blue **hydrated** copper(II) sulfate, when heated, loses its water → white **anhydrous** copper(II) sulfate.
- adding water turns it **blue** again (this is a test for water).

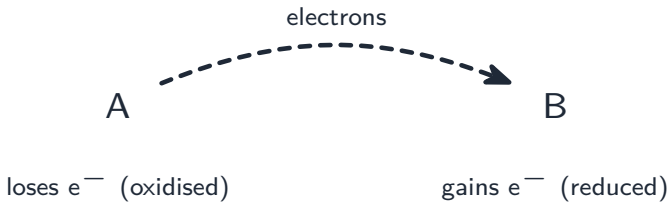


In a **closed system**, a reversible reaction reaches **equilibrium** when the **forward** and **reverse** rates are equal.

2 Redox: OIL RIG

- **oxidation** is **loss** of electrons.
- **reduction** is **gain** of electrons.

Remember **OIL RIG**: Oxidation Is Loss, Reduction Is Gain.



- an **oxidising agent** oxidises another substance (and is itself reduced).
- a **reducing agent** reduces another substance (and is itself oxidised).

Watch out: OIL RIG – Oxidation Is Loss of electrons, Reduction Is Gain. The **oxidising agent** is itself *reduced* (it takes the electrons); the **reducing agent** is itself *oxidised*. At equilibrium the forward and reverse rates are equal – the reaction has **not** stopped.

Practice

Try these in order.

6.1 What symbol shows a reversible reaction? [1]

6.2 Heating blue hydrated copper(II) sulfate gives a white solid. Name the change and the white solid. [2]

6.3 How could you turn the white solid blue again, and what does this test for? [2]

6.4 What does OIL RIG stand for? [2]

6.5 An oxidising agent oxidises another substance. What happens to the oxidising agent itself? [1]

6.6 Challenge. In the reaction $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$, zinc gives electrons to the copper ions. State which substance is **oxidised** and which is the **oxidising agent**. [2]