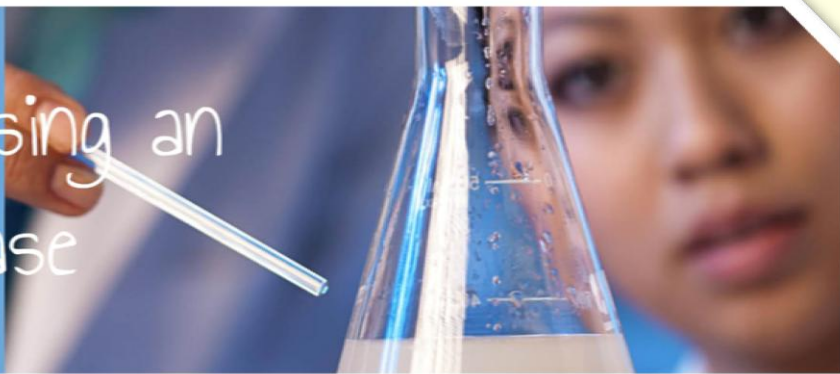


Neutralisation using an insoluble base



Answer all the questions below then check your answers

1. Which of the following is an insoluble base used in neutralisation reactions?
 - a) Sodium hydroxide
 - b) Potassium chloride
 - c) Copper oxide
 - d) Magnesium sulfate

2. What type of reaction occurs when an acid reacts with a base?
 - a) Combustion
 - b) Neutralisation
 - c) Oxidation
 - d) Reduction

3. Fill in the Gaps to complete the sentence below:

The reaction between an acid and an insoluble base produces a _____ and _____.

4. Write the word equation for the reaction between hydrochloric acid and copper oxide.
5. State how you would test the purity of a solid obtained from a neutralisation reaction.

- b. Explain how you would use melting point determination to assess the purity of a salt crystal sample.
6. Match the following acids with the salts they produce when reacted with copper oxide:

acid
Sulfuric acid
Nitric acid
Hydrochloric acid

Salt formed
Copper nitrate
Copper chloride
Copper sulfate

7. Fill in the gap to complete the sentence below:
- When sulfuric acid reacts with copper oxide, the salt formed is _____ and water.
8. Describe the steps involved in carrying out a neutralisation reaction between sulfuric acid and copper oxide, including how you would ensure the reaction is complete.
9. Explain how you would purify the solid copper sulfate obtained from the reaction between sulfuric acid and copper oxide, including the steps for recrystallisation.
10. Write the balanced chemical equation for the reaction between copper oxide (CuO) and hydrochloric acid (HCl).
11. What is the purpose of using an insoluble base like copper oxide in a neutralisation reaction with an acid?

- a) To produce a gas
- b) To form a precipitate
- c) To neutralise the acid and form a soluble salt
- d) To change the colour of the solution

12. Which of the following statements is true about the product formed when an acid reacts with an insoluble base?

- a) The product is always insoluble
- b) The product is always a gas
- c) The product is always a salt and water
- d) The product is always a metal

13. Which of the following is NOT a common insoluble base used in neutralisation reactions?

- a) Copper oxide
- b) Zinc oxide
- c) Sodium hydroxide
- d) Magnesium oxide

Answers

1. Which of the following is an insoluble base used in neutralisation reactions?

- a) Sodium hydroxide
- b) Potassium chloride
- c) Copper oxide
- d) Magnesium sulfate

Answer: c) Copper oxide

2. What type of reaction occurs when an acid reacts with a base?

- a) Combustion
- b) Neutralisation
- c) Oxidation
- d) Reduction

Answer: b) Neutralisation

3. Fill in the Gaps to complete the sentence below:

The reaction between an acid and an insoluble base produces a _____ and _____.

Answer: salt and water

4. Write the word equation for the reaction between hydrochloric acid and copper oxide.

Answer:

Hydrochloric acid + Copper oxide → Copper chloride + Water

5. State how you would test the purity of a solid obtained from a neutralisation reaction.

Answer: Test the melting point of the solid. If the melting point matches the known melting point of the pure substance, the solid is pure.

b. Explain how you would use melting point determination to assess the purity of a salt crystal sample.

Answer:

- *Measure the melting point of the sample.*
- *Compare the measured melting point to the known melting point of the pure salt.*
- *A pure substance will have a sharp melting point, while impurities will lower and broaden the melting range.*

6. Match the following acids with the salts they produce when reacted with copper oxide:

acid	Salt formed
Sulfuric acid	Copper nitrate
Nitric acid	Copper chloride
Hydrochloric acid	Copper sulfate

7. Fill in the gap to complete the sentence below:

When sulfuric acid reacts with copper oxide, the salt formed is _____ and water.

Answer: copper sulfate

8. Describe the steps involved in carrying out a neutralisation reaction between sulfuric acid and copper oxide, including how you would ensure the reaction is complete.

Answer:

- *Add a measured amount of hot sulfuric acid to a beaker.*
- *Gradually add copper oxide powder to the acid while stirring.*
- *Continue adding the copper oxide while stirring continually until it no longer dissolves, indicating that the acid has been neutralised.*
- *Filter the mixture to remove any unreacted copper oxide.*
- *Evaporate the water from the filtrate to obtain copper sulfate crystals.*

9. Explain how you would purify the solid copper sulfate obtained from the reaction between sulfuric acid and copper oxide, including the steps for recrystallisation.

Answer:

- *Dissolve the impure copper sulfate in the minimum amount of hot water needed to dissolve the solid sample.*
- *Then place the solution in an ice bath to promote crystallisation.*
- *Once crystals have formed, filter the solution to collect the copper sulfate crystals.*
- *Wash the crystals with a small amount of cold distilled water to remove any remaining impurities, filter using a Buchner funnel if necessary.*
- *Dry the purified crystals by pressing them between filter papers or using a desiccator.*

10. Write the balanced chemical equation for the reaction between copper oxide (CuO) and hydrochloric acid (HCl).



11. What is the purpose of using an insoluble base like copper oxide in a neutralisation reaction with an acid?
- a) To produce a gas
 - b) To form a precipitate
 - c) To neutralise the acid and form a soluble salt
 - d) To change the colour of the solution

Answer: c) To neutralise the acid and form a soluble salt

12. Which of the following statements is true about the product formed when an acid reacts with an insoluble base?
- a) The product is always insoluble
 - b) The product is always a gas
 - c) The product is always a salt and water
 - d) The product is always a metal

Answer: c) The product is always a salt and water

13. Which of the following is NOT a common insoluble base used in neutralisation reactions?
- a) Copper oxide
 - b) Zinc oxide
 - c) Sodium hydroxide
 - d) Magnesium oxide
- Answer:* c) Sodium hydroxide (it's soluble)