Name _____

Metal Marvels: How Acids React and What They Produce

Open-Ended Response Answer Key

1. Practical applications of the reaction between acids and metals include metal corrosion prevention, hydrogen production for fuel cells, and metal etching in electronics manufacturing. For example, in the automotive industry, coatings are applied to prevent the corrosion of car bodies.
2. To demonstrate the reaction between zinc and hydrochloric acid, you would need zinc metal strips, hydrochloric acid (diluted for safety), a beaker, a gas collection tube, and a delivery tube. Steps would include placing zinc strips in the acid, collecting the hydrogen gas produced in the gas collection tube, and observing bubbles rising from the metal.
3. Noble metals like gold and platinum are less reactive with acids due to their stable electron configurations. This property is utilized in jewelry making to create long-lasting, non-reactive jewelry pieces. In electronics, noble metals are used for contacts and connectors to ensure reliable and corrosion-resistant connections.
4. The reaction between acids and metals can produce hydrogen gas, which is flammable and poses safety concerns if not managed properly. In industry, safety measures and gas recovery systems are employed to minimize environmental impact. Efforts are also made to reduce the use of hazardous acids and implement recycling processes for metal byproducts.