

01

The glowing of an element in a heater or a filament in an electric bulb. An electric heater or a bulb glows when electric current is passed through it. But the glow vanishes when the current is switched off. Also, no new substances are formed.

- (a) What type of change is the glowing of an element in a heater or glowing of filament in an electric bulb ?
- (b) Why does the glow vanishes in both the electric heater and electric bulb ?
- (c) Which parts in an electric heater and electric bulb glow to produce heat and light ?

- (a) When current is switched on in an electric heater, the element heats up to produce heat. In the case of an electric bulb, the filament in it glows producing both light and heat. As only heat and light are produced in the heater and bulb with no formation of new substances, both are irreversible, physical changes.
- (b) Both the heater and bulb work on supply of current or electricity to them. Once the current or electricity supply is switched off or stopped, no glow is observed.
- (c) An element made up of nichrome and filament made up of tungsten produce heat and light.

02

When solid 1 is added to water, it dissolves with the evolution of a lot of heat and making little explosions to form two products 2 and 3. The properties of products 2 and 3 are entirely different from those of solid 1 as well as water. Moreover, products 2 and 3 cannot be reconverted into solid 1 and water. When another solid 4 is added to water, it dissolves with the absorption of a little heat to form a product 5 which cools down. The product 5 shows the properties of both, solid 4 as well as water. Moreover, product 5 can be converted into solid 4 and water.

- (a) What type of change occurs when solid 1 is dissolved in water ? Why ?
- (b) What type of change occurs when solid 4 is dissolved in water ? Why ?

- (a) Chemical change. Because the properties of products 2 and 3 are entirely different from those of solid 1 and water
- (b) Physical change. Because the product 5 shows the properties of both, solid 4 and water.

03

Most of the metals when exposed to moist air get rusted. Rusting can be prevented by not allowing air and oxygen to come in contact with the metal by painting or applying oil, covering with another metal resistant to rusting or corrosion.

- What are the different methods by which iron articles can be prevented from rusting ?
- How is galvanisation done ? What are the advantages ?
- Write an equation representing rusting of iron.

- Painting of iron articles, applying oil on iron articles and galvanising iron articles with non-corrosive metals like tin or zinc.
- Clean iron articles are dipped in hot molten zinc to deposit a layer of zinc on it. Galvanized iron articles do not rust even if there is a scratch on the zinc layer.
- Iron (Fe) + Oxygen (O_2) (from air) + Water or Water vapour (H_2O) (from air) \rightarrow Rust (Iron oxide) (Fe_2O_3)

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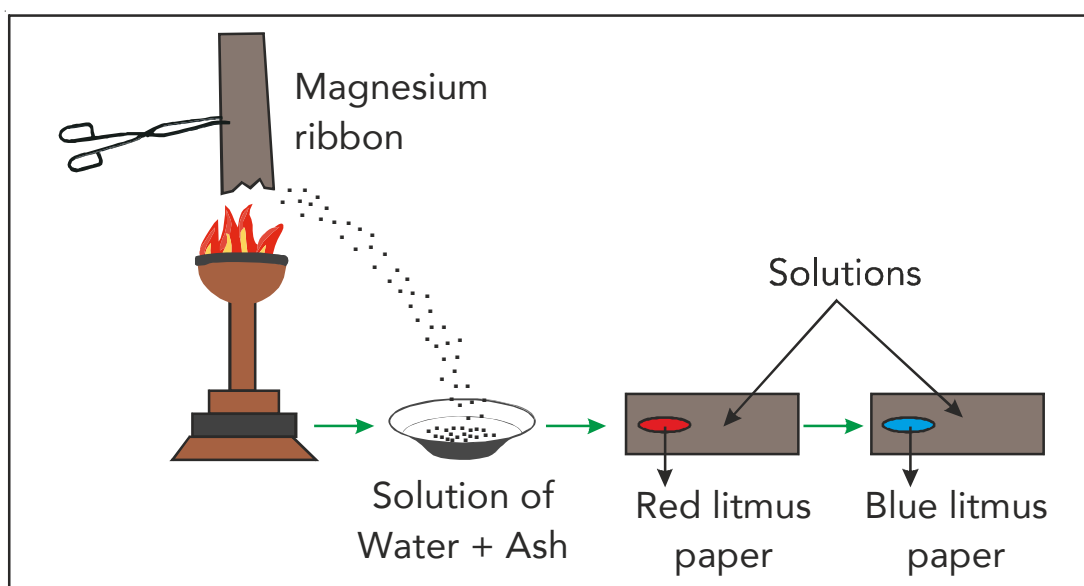
Add 2 drops of dilute sulphuric acid to 1 gram of CuSO_4 powder. Next add small amount of hot water to dissolve the above mixture. This mixture on cooling formed blue crystals of copper sulphate.

- What type of change occurred in the first half of the activity ?
- What type of change is crystallisation of copper sulphate solution ?
- What is the purpose of adding few drops of dilute sulphuric acid to copper sulphate powder ?

- Dissolving of CuSO_4 powder in water in the presence of dilute sulphuric acid is a physical change.
- It is a physical change as water evaporates leaving behind crystals of copper sulphate.
- Few drops of dilute sulphuric acid is added to copper sulphate powder to prevent the hydrolysis of copper and to separate out water and copper sulphate crystals. Dilute sulphuric acid acts as a dehydrating agent and removes water during crystallisation.

05

Observe the figure shown below.



- What is formed when magnesium ribbon is burnt in air ?
- The ash obtained in the above activity is dissolved in water to form a solution. What is the name of the solution ?
- Is the solution formed acidic, basic or neutral ? Indicate the change in colour when it is tested with a litmus paper.

- When magnesium ribbon is burnt in air, it reacts with oxygen to form Magnesium oxide (ash).
- Magnesium oxide dissolves in water to form magnesium hydroxide solution.
- The solution formed is basic as it turns red litmus paper blue.