

Diffusion



A teacher explained the particle model of solids, liquids and gases. She then demonstrated experiments showing how substances spread out (or diffuse) and asked her class to explain the effects in terms of particles.

Diffusion in Solids

Purple colour very slowly spreading out in agar jelly.

Diffusion in Liquids

Blue ink spreading out through water

Diffusion in Gases

Smell of spray quickly spreading out through room

Fact File

Solids, liquids and gases are made of particles too small to see. These particles can be used to explain the properties of different substances.

Solids are made of particles that are close together and cannot move around.

Liquids are made of particles that are close together but can move freely over each other.

Gases have particles that are generally far apart and are free to move quickly around.

Tasks

1. Label the following apparatus in the diagrams.

Agar jelly Purple crystal Forceps Syringe Water Ink Spray

2. Describe what the teacher did in each case and the results observed.
3. Does the information suggest that the diffusion happens fastest in solids, liquids or gases?
4. Gas particles are far apart and free to move around very quickly. Draw a picture to show how the particles in the spray can spread quickly through the air.
5. Liquid particles are close together but can slide freely over each other. Draw a picture showing how the blue ink particles spread through the water particles.
6. Solid particles are close together and cannot move much. Draw a picture showing how the particles of purple crystal struggle to get through the spaces between the agar particles.

Key Words

Diffusion. Diffuse. Solids. Liquids. Gases. Agar. Particles. Crystal.

Checklist for this activity

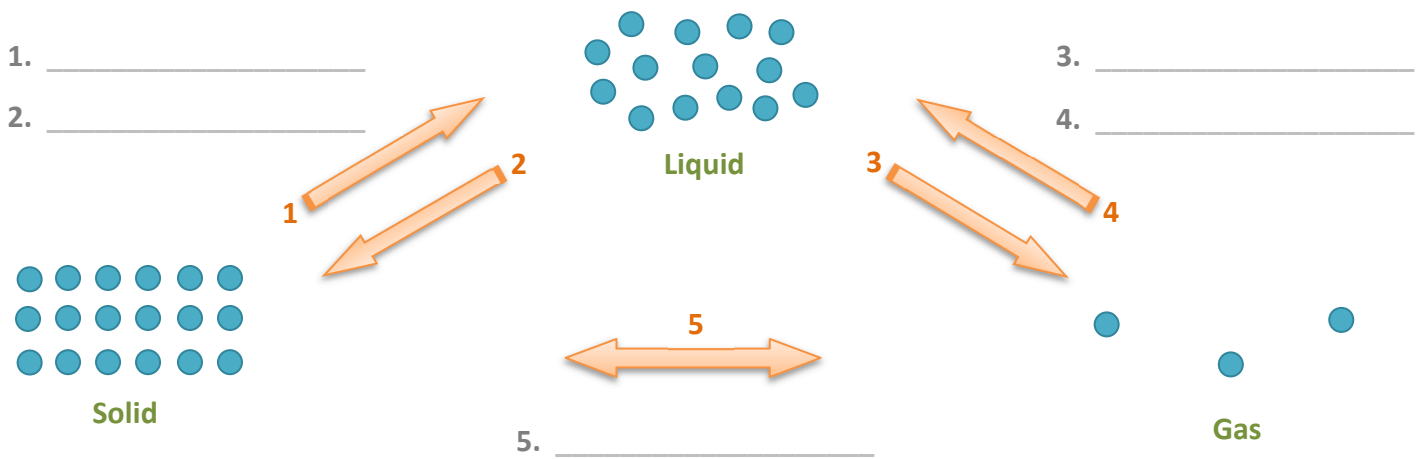
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|--|---|
| <input type="checkbox"/> Work on the sheet/in the file | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| <input type="checkbox"/> Write full answers | <input type="checkbox"/> Copy the <i>Fact File</i> |
| <input type="checkbox"/> Copy the diagrams | <input type="checkbox"/> Add your own research |

Changes of State



A. Choose words from this list to complete the spaces below.

condensation *melting* *sublimation* *evaporation* *freezing*



B. Say whether the events below are examples of *melting*, *freezing*, *evaporation*, *condensation* or *sublimation*.

- a. The ice cubes in my drink have disappeared. _____
- b. The puddles have all dried up. _____
- c. The mirror in the bathroom has misted up. _____
- d. The cold night has left ice on the roads. _____
- e. There seems to be smoke coming off the iodine block. _____
- f. My ice cream has dripped down my shirt. _____
- g. There is steam coming off that hot water. _____
- h. My clothes are all dry now. _____

C. Say whether you need to *add heat* or *remove heat* to make these things happen.

- a. Freeze water to make ice. _____
- b. Melt an ice cream. _____
- c. Boil some water. _____
- d. Change a gas into a liquid. _____
- e. Change a liquid into a solid. _____
- f. Change a solid into a gas. _____
- g. Dry off some clothes. _____

Collapsing Can



Aim To observe what happens when trapped air cools inside a metal can.

Prediction What do you think will happen as the air cools in the can? Why?

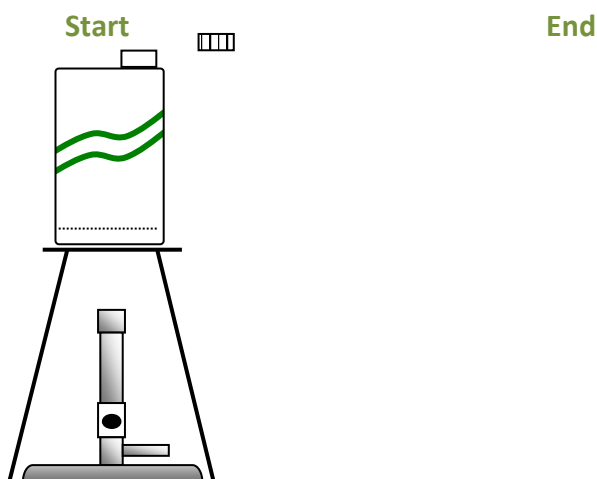
Apparatus Bunsen, safety mat, tripod, gauze, goggle, oil can with lid, water.

Method

1. Place about 1cm of water in an oil can and heat gently with the lid off.
2. When the water is boiling, turn off the heat and carefully replace the lid.
3. Observe the changes that take place as the water and trapped air cool.

Diagram

Complete and label.



Results

	What was seen	What was heard
Before heating		
During heating		
During cooling		

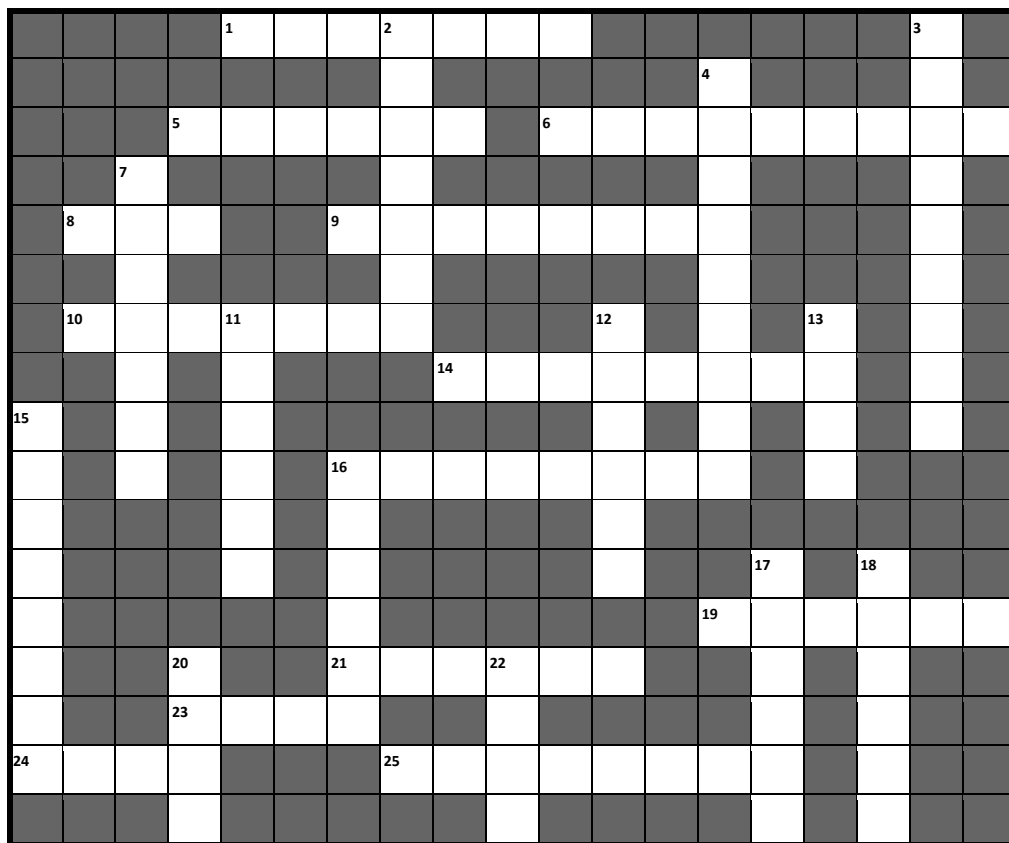
Conclusion

What happened to the can as the trapped air and water cooled? _____

Was your prediction correct? _____

Why do you think this happened? _____

Symbols Crossword



Across

- 1. Hg
- 5. Co
- 6. K
- 8. Sn
- 9. N
- 10. Li
- 14. F

Down

- 2. Ca
- 3. Al
- 4. Mg
- 7. Si
- 11. He
- 12. Na
- 13. Pb
- 15. H
- 16. C
- 17. Cu
- 18. Ag
- 20. Zn
- 22. Au