

Pressure in Fluids and Atmospheric Pressure

Chapter 4: Pressure in Fluids and Atmospheric Pressure · Topic 1

Key Concept

Pressure in a fluid at rest is given by $P = h \times \rho \times g$, where h is depth, ρ is fluid density, and g is gravitational acceleration.

Pascal's Law states that pressure applied to an enclosed fluid is transmitted equally in all directions, used in hydraulic systems.

Atmospheric pressure, caused by the weight of air above us, decreases with altitude since there's less air pressing down at higher elevations.

Understanding fluid and atmospheric pressure explains phenomena like why we can drink through a straw or why our ears pop at high altitude.

Quick Revision Notes

- Fluid pressure: $P = h \times \rho \times g$.
- h =depth, ρ =density, g =gravitational acceleration.
- Pascal's Law: pressure transmits equally in enclosed fluids.
- This is used in hydraulic systems.
- Atmospheric pressure is air's weight pressing down.
- It decreases with altitude.
- This explains drinking through a straw.
- It also explains ears popping at altitude.

Practice Questions

- 1 Calculate fluid pressure at a given depth.
- 2 Discuss Pascal's Law with a hydraulic system example.
- 3 Explain why atmospheric pressure decreases with altitude.
- 4 Discuss why we can drink through a straw.
- 5 Research a device using hydraulic pressure.
- 6 Explain fluid pressure in your own words.