

CHAPTER OVERVIEW

9: Gases

By comparison with solids or liquids, gases are often overlooked or ignored in everyday life. How many times, for example, have you taken an “empty” glass and filled it with water so you could have a drink? If questioned, most people would admit that the glass had been filled with a gas—air—before the water flowed in, but everyday speech has not yet evolved to conform with scientific knowledge. Nevertheless, the air which occupies “empty” glasses, surrounds the surface of the earth to a depth of about 50 km, and fills your lungs every time you breathe is extremely important. If we had to, most of us could survive for weeks without solid food and for days without liquid water. But each of us must have a fresh supply of air every few minutes to go on living.

Topic hierarchy

- 9.1: Prelude to Gases
- 9.2: Property of Gases
- 9.3: Pressure
- 9.4: Measurement of Pressure
 - 9.4.1: Lecture Demonstrations
- 9.5: Gas Laws
- 9.6: Avogadro's Law
- 9.7: Boyle's Law
 - 9.7.1: Lecture Demonstrations
- 9.8: Charles's Law
 - 9.8.1: Lecture Demonstration
- 9.9: Gay-Lussac's Law
- 9.10: The Ideal Gas Equation
 - 9.10.1: Lecture Demonstration
- 9.11: The Law of Combining Volumes
- 9.12: Dalton's Law of Partial Pressures
 - 9.12.1: Lecture Demonstration
- 9.13: Kinetic Theory of Gases- Postulates of the Kinetic Theory
- 9.14: Kinetic Theory of Gases- The Total Molecular Kinetic Energy
- 9.15: Kinetic Theory of Gases- Molecular Speeds
- 9.16: Kinetic Theory of Gases - Graham's Law of Diffusion
 - 9.16.1: Lecture Demonstrations
- 9.17: Kinetic Theory of Gases- The Distribution of Molecular Speeds
- 9.18: Deviations from the Ideal Gas Law

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