Unit 6 - It's a Matter of State: Solids, Liquids, and Gases

Content Area: **Science**
Course(s): **Chemistry Honors**
Time Period: **January**
Length: **4 weeks**
Status: **Published**

Transfer Skills

The kinetic molecular theory of matter is the foundation for the behavior and properties of all substances.

Enduring Understandings

Intermolecular forces affect the properties of all states of matter.

The phase of a substance is determined by distances between the particles and motions of the particles in that substance.

Temperature affects the properties and behavior of matter.

The hydrogen bonding in water accounts for it’s unique properties.

The kinetic molecular theory can conceptually predict, analyze, and explain the properties of gases.

Essential Questions

How can the physical state of a substance be predicted and used to differentiate between states of matter?

What are the features of phase diagrams and heating curves?

How do substances change from one state to another?

Content

Kinetic Molecular Theory, Vapor pressure, boiling point, allotropes, amorphous solid, crystalline solid, critical point, triple point, surface tension, viscosity diffusion, effusion, compressibility

Skills

Describe general characteristics and properties of solids, liquids and gases

Explain why a liquid has a vapor pressure and why a change in temperature causes a change in vapor pressure.

Interpret vapor pressure diagrams, phase diagrams, and heating curves.

Resources

Standards

SCI.9-12.5.1.12.A.2	Develop and use mathematical, physical, and computational tools to build evidence-based models and to pose theories.
SCI.9-12.5.1.12.B.1	Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
SCI.9-12.5.1.12.B.2	Build, refine, and represent evidence-based models using mathematical, physical, and computational tools.
SCI.9-12.5.1.12.B.3	Revise predictions and explanations using evidence, and connect explanations/arguments to established scientific knowledge, models, and theories.
SCI.9-12.5.1.12.B.4	Develop quality controls to examine data sets and to examine evidence as a means of generating and reviewing explanations.
SCI.9-12.5.1.12.C.1	Reflect on and revise understandings as new evidence emerges.
SCI.9-12.5.1.12.C.2	Use data representations and new models to revise predictions and explanations.
SCI.9-12.5.2.12.B.2	Describe oxidation and reduction reactions, and give examples of oxidation and reduction reactions that have an impact on the environment, such as corrosion and the burning of fuel.
SCI.9-12.5.2.12.C.1	Use the kinetic molecular theory to describe and explain the properties of solids, liquids, and gases.
SCI.9-12.5.2.12.C.2	Account for any trends in the melting points and boiling points of various compounds.