EPSD Curriculum and HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

GRADE 8

EPSD Unit 2: Interactions of Matter
First Marking Period

<table>
<tr><td colspan="2">Overview: Students build understandings of what occurs at the atomic and molecular scale. Students apply their understanding that pure substances have characteristic properties and are made from a single type of atom or molecule. They also provide a molecular level accounts to explain states of matter and changes between states. The crosscutting concepts of cause and effect, scale, proportion and quantity, structure and function, interdependence of science, engineering, and technology, and the influence of science, engineering and technology on society and the natural world provide a framework for understanding the disciplinary core ideas. Students demonstrate grade appropriate proficiency in developing and using models, and obtaining, evaluating, and communicating information. Students are also expected to use the scientific and engineering practices to demonstrate understanding of the core ideas.</td><td colspan="2">Science Dimensions Program Resources Module J</td></tr>
<tr><td colspan="2"></td><td colspan="2">Unit 2: States of Matter and Changes of State
Unit Video (hot gasses and liquid molten material from beneath Earth’s surface); Why it Matters p. 70; Unit Starter p. 71; Vocabulary p. 71G; Unit Project p. 71I; Unit Connections p. 106; Unit Review pp. 107-110; Unit Performance Task pp. 111-112</td></tr>
<tr><td colspan="2"></td><td colspan="2">Standard for all Units: (D) Interactive Multilingual Glossary; (D/P) Unit Pretest; (D) Lesson Quizzes; (D/P) Unit Tests

Note: Refer to the Curriculum Alignment Common Language (CACL) Guide to decipher acronyms.</td></tr>
<tr><td colspan="2" rowspan="2"></td><td rowspan="2">Lesson 1: States of Matter pp. 72-85

D/P- WIM Questions p. 70

D/P- CYEI (digital picture) How do these three forms of bromine differ from each other? p. 73

P- ENB (prompt) Students gather evidence to help explain the difference they see in the three forms of bromine. p. 73
D/P- Observing Properties of Matter (Students watch the video showing liquid metal being poured into molds and</td><td rowspan="2">Lesson 2: Changes of State pp. 86-105

D/P- WIM Questions p. 70

D/P- CYEI (digital picture) What could cause a piece of metal to melt in a person’s hand? p. 87

P- ENB (prompt) Gather evidence to help explain how a piece of metal could melt in someone’s hand. p. 87
D/P- Changes of State (Students watch video showing a professional glassworker in the process of making a glass vase; with a partner, students determine the</td></tr>
<tr><td>Standards: (MS-PS1-3) Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. (MS-PS1-4) Develop a model that predicts and describes changes in particle motion,</td><td>Instructional Days: 20-25</td></tr>
</table>

temperature, and state of a pure substance when thermal energy is added or removed.		observe how the sample of liquid metal changes.) p. 74 D/P- HOL Activity Observe States of Matter (Students use marbles, water, and air as models for solids, liquids, and gases in order to determine their individual properties; students can also view video showing how to use their finger as a cap for the syringe.) p. 75 D/P- DTM Students use data from the lab to reason whether the volume of air changed in the syringe due to increased pushing on the plunger. p. 76 P- ENB (prompt) Students identify how their observations of the solid, the liquid, and the gas samples help them describe the differences in the three forms of bromine; students record their evidence in their ENB. p. 76 D/P- ENGIT Students consider the tank of a truck carrying propane, gas and respond to the following questions: Why is the tank design useful for transporting gas? Considering the volume and shape properties of each state of matter, how might the container on a truck carrying a liquid or solid be designed differently? p. 76 D/P- Model Particles in Solids, Liquids, and Gases (Students watch each animation to see how particle spacing and motion differs in each state of	change of state that is shown in the video.) p. 88 D/P- HOL Activity Investigate a Change of State (Students work in small groups to make a prediction about what could change the rate of an ice cube melting. Then students plan and carry out an investigation to support or disprove their predictions.) pp. 89-90 P- ENB (prompt) How does energy relate to the question of how a piece of metal might melt in someone's hand? p. 90 D/P- Change of State From Solid to Liquid and From Liquid to Gas (Students watch animation and explore online to learn more about the relationship between thermal energy and change of state.) p. 92 D/P- DTM Analyze Temperature During a Change of State (Students interpret data in order to determine how temperature changes during a change of state.) p. 93 P- ENB (prompt) How might melting point and a change in the kinetic energy of particles help to explain why a piece of metal could melt in someone's hand? Record evidence. p. 93 D/P- ENGIT Students identify problems associated with early spring weather that melts mountain snow that runs off to nearby towns; students also define criteria and constraints associated with finding solutions to the problems. p. 94
Objectives: Students will: Predict changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed in natural or designed systems. Obtain, evaluate, and communicate information to show that synthetic materials come from natural resources and affect society			
Topics: States of Matter Changes in States of Matter Polymers Twenty-First Century Themes and Skills include: • The Four C's • Life and Career Skills • Information and Media literacy.			
Essential Questions: How can we trace synthetic materials back to natural ingredients? How can you tell what the molecules are doing in a substance?			

	matter; students also label the state of matter that each model shows.) p. 78 D/P- LS Students use what they have observed and learned about each state of matter to describe the shape and volume properties of a solid, liquid and gas. Students complete the table. p. 79 P- ENB (prompt) How could kinetic energy, particle motion, and particle attraction help explain the differences in the three forms of bromine? Students record evidence in their ENB. p. 80 D/P- TIF (enrich) Why Does Ice Float? pp. 81-82 D- Hands-On Labs; Plasma—A Fourth State of Matter; Propose Your Own Path D/P- Lesson Self Check pp. 83-85 D- Lesson Quiz D-Make Your Own Study Guide P- DI (ELL/RTI) p. 71G P- Extension p. 71G P- COLLAB p. 71H P- Connections to Other Disciplines p. 71H D-Science Safety HB D- CCC-HB D- ELA-HB D- M-HB D- SEP-HB	D/P- Energy Loss and Change of State (Students watch video showing how ice forms on the surface of a lake in the winter and explain why the liquid water changes to ice.) p. 95 D/P- Change of State from Liquid to Solid (Students watch animation and think about the changes in particle motion and arrangement; students identify the process being modeled in the animation.) p. 97 D/P- LS Students draw a diagram to represent the process of condensation, and write a caption, to support the diagram, that describe what happens to the particle motion and energy during a change of state from gas to liquid. p. 97 D/P- Analyze Changes of State (Students watch video to see what happens as lava spills into the ocean; students also identify changes of state they see happening in the video and use evidence from the video to support their answer.) p. 98 D/P- Pressure (Students explore online about pressure in a bike tire and learn how the variations in pressure can affect changes of state.) p. 99 D/P- Elevation and Air Pressure (Students watch animation to see why the air pressure at lower elevations is greater than air pressure at higher elevations.) p. 99

	D-ScienceSaurus Reference HB	D/P- TIF (enrich) Careers in Science: Forensics pp. 101-102 D- Hands-On Labs; Freezing Point Depression; Propose Your Own Path D/P- Lesson Self Check pp. 103-105 D- Lesson Quiz D-Make Your Own Study Guide P- DI (ELL/RTI) p. 71G P- Extension p. 71G P- COLLAB p. 71H P- Connections to Other Disciplines p. 71H D-Science Safety HB D- CCC-HB D- ELA-HB D- M-HB D- SEP-HB D-ScienceSaurus Reference HB D- VBP Take the Long Way D-VL- Temperature and Thermal Energy

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Curriculum Alignment Common Language (CACL) Guide 6-8		
Acronym	**Word/Phrase**	**Description**
CER	Claims Evidence Reasoning	Students make a claim and gather evidence along the way (during EXPLORATORY activities) to support claim.
CCC-HB	Crosscutting Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
CYEI	Can You Explain It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.
CYSI	Can You Solve It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.
D	Digital	Program resources and features in interactive digital form.
DI (ELL/RTI) **Extension** **COLLAB** **Connections to Other Disciplines**	Differentiated Instruction (English Language Learner/Response to Intervention) Collaboration Connections to Other Disciplines	A page that lists all learning activities used to differentiate learning, engage students in collaborative activities and connect learning to other subjects.
DTM	Do the Math	Integrated subject learning.
ENB	Evidence Notebook	Student notebook or journal used to gather evidence during EXPLORATORY learning activities to support their claims.
ENGIT	Engineer It	Integrated subject learning.
ELA-HB	English Language Arts Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
HOL	Hands-On Lab	Activities or experiments that enable students to demonstrate scientific procedures and analysis.
LS	Language SmArts	Integrated subject learning.

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M-HB	Math Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
P	Print	Program resources and features in print form.
SEP-HB	Science and Engineer Practices Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
TIF	Take It Further (enrich)	Enrichment activities for students in digital or print.
VBP	Video Based Project	Real life videos related to science and/or engineering that enable students to demonstrate mastery of performance expectations.
VL	Virtual Lab	Fully interactive simulations in which students perform experiments, collect data and answer questions.
WIM	Why It Matters	Questions related to lessons within each unit that asks students to consider how science affects the world around them.
YSI	You Solve It (Simulation)	Open-ended simulation-based learning with multiple answer options.