



Unit 3 Chemical Reactions

High School Chemistry

Unit Length and Description:

9 Instructional Weeks

Students will construct and revise explanations for the outcome of a simple chemical reaction based on the valence electron, periodic table trends, and knowledge of the patterns of chemical properties. They will also illustrate the release and absorption of energy from a chemical reactions system depending upon the changes in total bond energy. Students will use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

Science Standards:

- HS-PS1-2** Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.
- HS-PS1-4** Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.
- HS-PS1-7** Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

Enduring Understandings- Unit Anchor Phenomenon:

MREs (Meals Ready to Eat) provide hot meals in areas with no cooking infrastructure using military grade Flameless Ration Heaters.

Essential Questions- Reflective Summaries:

- Predict the outcome of a simple chemical reaction and explain your answer using evidence from the Periodic Table of Elements.
- Given a chemical equation, illustrate the bond energy of the products and reactants as well as any energy released or absorbed.
- Explain how the principle of conservation of mass leads to the necessity of balancing chemical equations.