Lesson: Alka-Seltzer Experiment	Name:
Teacher:	Date:

Fizzing Science: Exploring the Chemistry of Alka-Seltzer Reactions Lesson Plan

www.innovatewithmrbarbado.com https://www.youtube.com/@STEMClub-z7l

Florida State Standard:

SC.4.P.8.1 – Recognize that the properties of matter can change in various ways, including physical changes and chemical reactions.

Florida State Benchmark:

SC.4.P.8.2 – Identify that the amount of substance remains the same before and after a chemical reaction, even though physical changes may occur.

NGSS Standards:

- 5-PS1-4: Conduct investigations to determine whether the mixing of two or more substances results in new substances.
- MS-PS1-2: Analyze and interpret data on the properties of substances before and after the substances interact.

Grade Level: 4-8 (Adaptable)
Subject: STEM / Science (Chemistry)

Lesson Focus:

Exploring acid-base reactions, chemical changes, and gas production through the Alka-Seltzer experiment.

Materials Required:

- Alka-Seltzer tablets
- Water (room temperature)
- Clear plastic cup or small beaker
- Stopwatch or timer
- Stirring rod (optional)

Lesson Objectives:

By the end of this lesson, students will be able to:

1. Conduct the Alka-Seltzer experiment to observe and analyze chemical reactions.

2. Record changes in reaction time, gas production, and physical observations.
3. Formulate hypotheses on how varying conditions, such as water volume and tablet quantity, affect the reaction.

Procedures:

1. Introduction (10 minutes)

- Introduce chemical reactions, focusing on acid-base interactions and gas production.
- Ask students if they have seen or used Alka-Seltzer before, and discuss what they think happens when it is added to water.
- Present lesson objectives and review key vocabulary: *acid*, *base*, *chemical reaction*, *gas production*.

2. Experiment (25-30 minutes)

- Step 1: Place the cup or beaker on a stable surface.
- Step 2: Pour a measured amount of water (e.g., 100 mL) into the cup.
- Step 3: Quickly drop one Alka-Seltzer tablet into the water.
- Step 4: Start the stopwatch and observe the reaction.
- Step 5: Record observations: reaction start time, duration, bubbling, fizzing, and foam production.
- Step 6 (Optional): Measure gas production using a balloon attached to a sealed container to capture CO_2.

3. Observation (5-10 minutes)

- Students share observations and discuss signs of chemical reactions.
- Compare results and consider factors affecting the reaction (temperature, water volume, tablet quantity).

4. Generalization (5-10 minutes)

- Summarize key concepts: acid-base reactions, gas production, and factors affecting reaction rates.
- Discuss the importance of variables in experiments and how changing one factor alters results.

5. Assessment (Formative Questions):

1. What happens to the Alka-Seltzer tablet in water?

2. How long does the reaction last?

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3. What observable changes occur during the reaction?

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4. What gas is produced during the reaction?

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5. How does changing the amount of water affect the reaction?

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6. What would happen if you used more than one tablet?

Safety Precautions:

- Students must wear safety goggles.
- Handle Alka-Seltzer tablets carefully; do not ingest.
- Conduct the experiment on a stable surface.
- Avoid inhaling gases directly.
- Clean up spills immediately and wash hands after the activity.

Accommodations for ELL and ESE Students:

- Provide visual aids (diagrams, photos).
- Use simple, clear language and step-by-step instructions.
- Pair students for guidance.
- Provide vocabulary in English and native language for ELL students.
- Allow additional time to complete tasks.
- For ESE students, demonstrate each step physically and ensure understanding before starting.