

Explaining Chemical Change

Reaction Core Vault with Fizzling

Learning target

Explain a reaction claim and account for matter using a simple model.



Before you begin

Use the reference page and discussion prompts on their own, or open the optional browser adventure. No earlier lesson or physical kit is required.

For online play: use an internet-connected current browser with local storage enabled. Read the three-part Gemling briefing, answer the quick check, and apply the evidence at three checkpoints. Retry feedback supports review; results are not a secure test or gradebook.

Use for teacher-led review, science centers or partner practice. Independent readers may need support with the vocabulary below. The design target is grades 3-5; choose support based on the learner.

Vocabulary and concepts to discuss

New substances; evidence; matter conservation; gases retained in closed models

Open Reaction Core Vault - direct lesson link

Scan the QR code or use the clickable link. This guide is usable offline; the adventure runs on an external educational website.



Explaining Chemical Change - key ideas

1. The first clues

Chemical change forms new substances, but matter is conserved. Gases count as matter even when they are not visible.

2. How the clues connect

A closed system retains products. If gas escapes from an open container, the measured contents may lose mass because material left the measured system.

3. Our evidence record

Our sealed reaction model reads 100 g before and after. A new gas is retained inside. The stable total supports conservation, not a claim that no reaction occurred.

Keep the science accurate

No equations, bonding, acids/bases course or catalyst mechanism required. A single color change or bubbles alone is not proof.

Apply the evidence

Use a specific observation from this lesson to explain one choice. Point to a clue, then connect that clue to a scientific idea.

Curriculum reference: <https://www.nextgenscience.org/dci-arrangement/5-ps1-matter-and-its-interactions>

Talk through the evidence

1. What distinguishes a chemical change?

Expected answer: New substances

Reasoning: Chemical change forms new substances, but matter is conserved. Gases count as matter even when they are not visible.

2. Why can a sealed reaction keep the same total mass?

Expected answer: All material remains inside

Reasoning: Our sealed reaction model reads 100 g before and after. A new gas is retained inside. The stable total supports conservation, not a claim that no reaction occurred.

3. What does the model read after reaction?

Expected answer: 100 g

Reasoning: Our sealed reaction model reads 100 g before and after. A new gas is retained inside. The stable total supports conservation, not a claim that no reaction occurred.

4. Why might an open container's contents weigh less?

Expected answer: Gas escaped

Reasoning: A closed system retains products. If gas escapes from an open container, the measured contents may lose mass because material left the measured system.

Guide the discussion

Ask learners to name the evidence that supports their answer. If an answer differs, revisit the matching key idea on page 2 and invite a revised explanation.

Online rewards: this lesson grants one fixed digital Expedition Discovery. Five saved digital Gemling friends become available only after all six distinct subject lessons are complete, in any order. Digital rewards do not establish physical ownership.