

## THE STANDARD

# Chemical Reactions

Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.



## PS1.A · Structure and Properties of Matter

Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it.

Every substance has a fingerprint of properties: density, melting point, solubility, flammability, odor. When two substances actually react, you don't get a mix of the originals. You get something new with different properties. PS1.A gives them the properties to measure. **PS1.B explains the atomic rearrangement behind the change.**



## Analyzing and Interpreting Data

Analyze and interpret data to determine similarities and differences in findings.

Students aren't memorizing what counts as a reaction. They're comparing before/after data and arguing whether it supports a reaction or just a phase change. **Hand them a properties table and ask: what stayed the same, what changed, what does that tell us?**



## Patterns

Macroscopic patterns are related to the nature of microscopic and atomic-level structure.

The big idea: what you can see and measure (color change, bubbles, temperature swing, a new smell) comes from atoms rearranging underneath. Students don't need to see the atoms to know it happened. **They read the patterns in the data and connect them to a structural change they can't observe.**