THE STANDARD

Chemical Reaction Data

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

DCI
DISCIPLINARY CORE IDEA

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.**

SEP
SCIENCE & ENGINEERING PRACTICE

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?**

CCC
CROSSCUTTING CONCEPT

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.**