

Physical and Chemical Properties

Student Worksheet | g09_u02_w06

Today I can: distinguish physical from chemical properties and changes, use evidence cautiously, and select a property for a materials purpose.

Time/use: 95 minutes; class, homework, club, tutoring, or independent study.

Vocabulary: property, physical change, chemical change, reactivity, flammability, density, solubility, conductivity, evidence.

A. Quick checks

1. Classify melting point as physical or chemical property.

2. Classify flammability as physical or chemical property.

3. Is crushing a can a physical or chemical change?

4. Is iron rusting a physical or chemical change?

5. Name one property useful for a saucepan handle.

6. Does color change alone prove a chemical change? Explain.

7. Which statement is an observation: “solid formed” or “new substance formed”?

B. Guided application

8. Sort: dissolving sugar, burning paper, boiling water, tarnishing silver.

9. A sample has mass 12.0 g and volume 4.0 mL. Calculate density.

10. Explain why density is intensive while mass is extensive.

11. A coin is cut in half. Which changes: mass, density, melting point?

12. Choose a property to distinguish aluminum from an equal-sized plastic block without burning either.

13. A liquid evaporates and leaves no residue. What can and cannot be concluded?

14. Write one safe test to compare electrical conductivity of two approved solid samples.

C. Curiosity / application

15. A phone case must be tough, light, and electrically insulating. Link each need to a property.

16. Why is “chemical-free” not a scientific description of a product?

17. A conservation group tests whether a coating resists saltwater. Give a DV, a comparison, and a safety limit.

Competition Corner

18. A tablet dissolves faster when crushed. Does the faster rate prove a chemical change? Use particle/surface-area reasoning.

19. Two clear liquids are mixed and the container becomes cold. What evidence supports a chemical-change claim, what evidence is insufficient, and what safe additional data would help?

20. A material is light, shiny, and conducts electricity. Give two possible material classes and explain why properties narrow rather than prove identity.
