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Warm-Up | Chemical Properties

Lesson Question What happens during a chemical change?

Lesson Goals

Explore the chemical [properties] of matter.

- **Explain** what happens during a [chemical] change.
- **Identify** examples of chemical [changes].
- **Differentiate** between [physical] and chemical changes.

Words to Know

Fill in this table as you work through the lesson. You may also use the glossary to help you.

chemical property	a characteristic of matter that describes its ability to change into a different substance
chemical change	a change in matter that results in a change in its identity and properties
reactivity	the ability of a substance to combine chemically with another
combustibility	the ability of a substance to burn

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Physical Properties of Matter

- Physical properties can be observed and do not change the identity of the substance.
- A physical change is a change in some of the physical properties of matter but not in its identity.

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Chemical Properties

- Chemical properties describe how matter can change into different substances.
  - To observe the chemical properties of a substance, you must try to change it to another substance.
- Examples
  - Combustibility – the ability of a substance to burn
    - wood in a campfire
    - matches
  - Reactivity – the ability of a substance to combine chemically with another
    - rusting

Chemical Change

A chemical change:

- forms new substances with different properties.
- cannot be reversed by physical changes.

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Indicators of Chemical Change

- production of odor
- change of energy
- change of color
- formation of bubbles
- formation of a solid

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Physical Properties

- Physical properties can be observed and do not change the identity of the substance.
- For example, iron:
  - is silvery gray.
  - is dense but relatively soft.
  - has a melting point at 1,538°C.
  - has a boiling point at 2,862°C.
  - is a good conductor.

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Chemical Properties

- Chemical properties describe the ability of one substance to change into another.
- For example, iron:
  - reacts with oxygen to form rust.
  - reacts with other elements to produce fireworks.
  - is used to produce colored sparks.

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Physical and Chemical Changes

- In a physical change, some physical properties change, but the identity does not.
- In a chemical change, both the properties and the identity change.

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Summary | Chemical Properties

Lesson Question

What happens during a chemical change?

Answer

(Sample answer) During a chemical change, both the identity and properties of a substance change.

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Review: Key Concepts

Physical properties:

- can be observed and do not change the [identity] of the substance.

Physical changes:

- may change some [physical] properties of a substance but not its identity.

Chemical properties:

- describe the ability of one substance to change into [another].

Chemical changes:

- cause both the properties and the [identity] of a substance to change.

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Summary | Chemical Properties

Use this space to write any questions or thoughts about this lesson.

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