

Name: _____
Blk: _____ Date: _____

Science 9 Notes on 3.3 Physical and Chemical Changes

Recall from Chapter 1:

In **physical changes**, the appearance of a substance changes, but the chemical bonds holding the substance together do not change. Examples: **melting, freezing, boiling**

In **chemical changes**, new substances are produced in the process of breaking chemical bonds and forming new ones.

Evidence of chemical change:

1. **Colour** change
2. **Heat, light, sound** produced or consumed
3. Bubbles of **gas** form
4. Formation of a **precipitate**
5. The change is **difficult** to reverse

Energy Changes:

In both physical and chemical changes, **energy changes** take place. This energy change can mean releasing to or absorbing energy from the environment.

Exothermic reactions involve the overall **release** of energy in the form of heat and light.

Endothermic reactions involve the overall **absorption** of energy.



Exothermic



Endothermic

Sung to the tune of Frère Jacques:

Endothermic x2, Heat goes in
Exothermic x2, Heat leaves

Applications of Chemical Changes:

Some chemical changes present problems, while others provide opportunities and advantages.

Corrosion is a major problem for steel structures - by protecting steel surfaces, the chemical reaction of iron with oxygen can be prevented.

First Nations people of the Pacific Coast have used **smoking** as a means of preserving food. Smoke causes chemical changes in meat that kill bacteria.

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Science 9
Notes on 3.3 Physical and Chemical
Changes

Recall from Chapter 1:

In _____, the appearance of a substance changes, but the chemical bonds holding the substance together do not change. Examples: _____

In _____, new substances are produced in the process of breaking chemical bonds and forming new ones.

Evidence of chemical change:

1. _____ change
2. _____ produced or consumed
3. Bubbles of _____ form
4. Formation of a _____
5. The change is _____ to reverse

Energy Changes:

In both physical and chemical changes, _____ take place. This energy change can mean releasing to or absorbing energy from the environment.

_____ reactions involve the overall _____ of energy in the form of heat and light.

_____ reactions involve the overall _____ of energy.



Sung to the tune of Frère Jacques:

Endothermic x2, Heat goes in
Exothermic x2, Heat leaves

Applications of Chemical Changes:

Some chemical changes present problems, while others provide opportunities and advantages.

_____ is a major problem for steel structures - by protecting steel surfaces, the chemical reaction of iron with oxygen can be prevented.

First Nations people of the Pacific Coast have used _____ as a means of preserving food. Smoke causes chemical changes in meat that kill bacteria.