**What Happens to a Substance in a Physical Change?**

* A **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change alters the form or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** but does not turn any **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in the matter into a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** substance.
* A **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** that undergoes a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is still the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** substance **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** the change.
* Examples include: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** into water, a tree being cut **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and ice **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** on a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

**Changes of State**

* The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** states of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is an example of a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** water changed state and became **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and mixed with the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* When **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** changes state it is an example of a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change.

**Changes in Shape or Form**

* Another way that a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change can take place is by **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** it as well as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** matter.
* We know the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** a substance is a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change because if we evaporate the water there is a crust of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** left **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Close examination shows us that the crust left is actually the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** that was **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** with.
* Therefore a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change took place and the substance only changed **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

**What Happens to a Substance in a Chemical Change?**

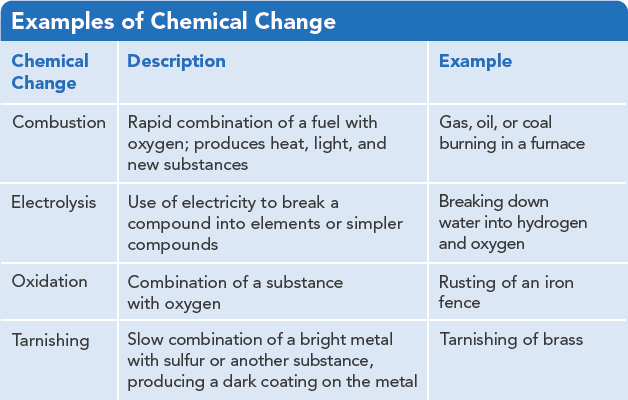
* A **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in matter that produces one or more **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** substances is a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* In some **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** changes, a single substance **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** down into two or more **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** substances.
* For example, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** breaks down into **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* In other chemical changes, two or more substances **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to form different **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* For example, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a natural chemical change. Several **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** combine with **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** from the sung to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** new substances.

**Chemical Changes used everyday**

* Some **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** changes are used in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to collect **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** uses super strong glues to make **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** more **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is heated to a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and the vapor combines with **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and other body chemicals to form a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** powder.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a chemical that reacts with **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* It combines with traces of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** that are too small to see and creates a substance that **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

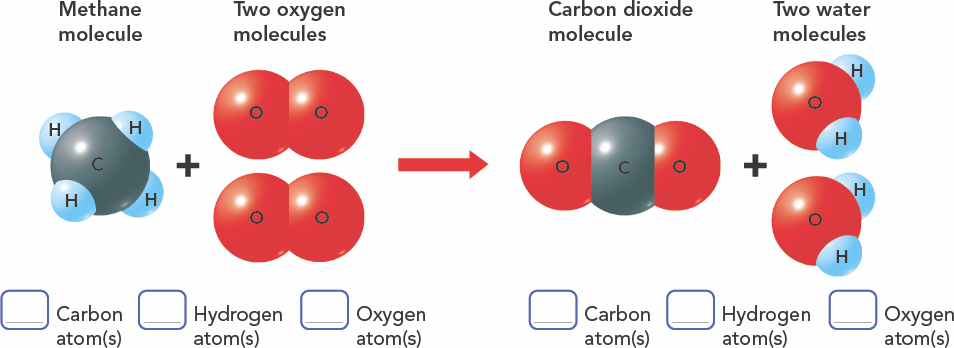
**Examples of Chemical Change**

* One common **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change is the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of natural gas on a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** stove.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** gas is mostly made up of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (CH4).
* When **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** burns it combines with **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in the air and forms **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** substances.
* The new substances that form include **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (CO2) and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (H2O).
* Each substance can be **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** by their **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, which are different from those of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* The chemical changes that occurs when **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, such as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, burn in air is called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.



**Conservation of Mass**

* In the late 1770’s the French Chemist, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, measured **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** both **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** a chemical change.
* His data showed that **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** was **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** during the change.
* The fact that matter is not **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or destroyed in any **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change is called the law of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* If you could measure all of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and water produced when **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** you would find that it **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** plus the mass of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** from the atmosphere.



**How are Changes in Energy and Matter Related?**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the ability to do **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Every **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change in matter includes a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* When **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** changes to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** water, it **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** energy from the surrounding **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* When candle wax burns, it gives off **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Like matter, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is never **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** it only changes **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

**Temperature**

* Think about how it feels when you walk into an air conditioned building on a really hot summer day. Think of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a measure of how hot or cold something is.
* It is related to the energy of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* The particles of gas in the warm outside air have **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** average **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** than the particles of air inside the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** building.

**Thermal Energy**

* Thermal energy is the total **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of all the particles in an object.
* You experience thermal energy when you describe **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** as feeling **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Temperature and thermal energy are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** the same, but the amount of thermal energy an object has is related to its **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Thermal energy naturally flows from **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** matter to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** matter.

**Thermal Energy and Changes in Matter**

* Thermal energy is often **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** when **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** changes.
* For example, ice **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** thermal energy from **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** matter as it melts making the surroundings feeling **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* That’s why you can pack food and drinks in an ice-filled cooler.
* The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of ice is an **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change, a change in which energy is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Changes in matter can also occur when energy is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* An **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** change **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** energy.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a chemical change that releases **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

**Transforming Chemical Energy**

* The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** stored in the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** between atoms is a form of energy called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Chemical energy is stored in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and even the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of your body.
* We gain chemical energy by **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** food.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** fuels **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** chemical energy and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** some of it as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** energy.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** energy can turn into other forms of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and other forms of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** can turn into **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** energy.

