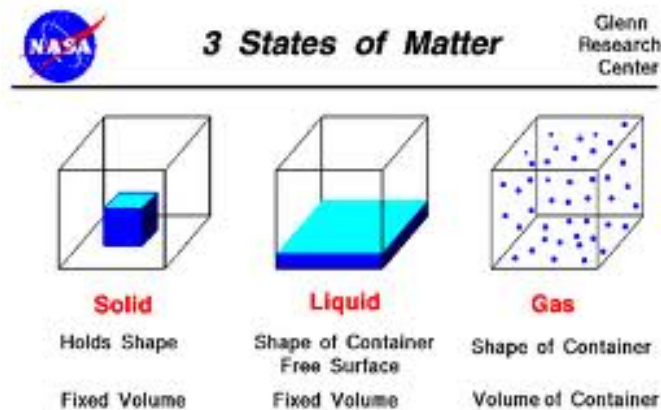


Section 2.1 Models of Matter: The Particle Theory

Particle theory is a widely believed theory of matter, which essentially states that matter is made up of small particles which are constantly moving.

At a basic level, particle theory helps categorize the three main states of matter that we see everyday - solid, liquid, and gas



[Solid Liquid Gas PowerPoint](#)

5 Key Components of Particle Theory:

1. All matter is made up of tiny particles.
2. All particles of one substance are the same.
3. Different substances are made of different particles.
4. Particles are always moving. (The more energy, the faster they move)
5. There are attractive forces between particles. (Forces are stronger when particles are closer together)

PURE SUBSTANCE - contains only 1 type of particle (ex. aluminum foil)

MIXTURE - contains at least 2 different pure substances (or 2 different types of particles) (ex. cookies)

Classifying Mixtures

HETEROGENEOUS MIXTURE - a substance in which the different components are identifiable and can be separated by physical means (ex. salad, trail mix)

HOMOGENEOUS MIXTURE - A homogeneous mixture has the same uniform appearance and composition throughout. Many homogeneous mixtures are commonly referred to as SOLUTIONS (ex. coffee, sugar in water)

[Solutions & Mixtures PowerPoint](#) (Parts 1 & 2)

Elements and Compounds

ELEMENTS - Pure substances that cannot be broken down into simpler substances. (Water is made of the elements hydrogen and oxygen)

COMPOUNDS - Pure substances that contain two or more different elements in a fixed proportion. (Formed when elements combine together in *chemical reactions*.)

ATOMS - The smallest part of an element that can combine with other elements.

MOLECULES - Two or more atoms chemically bonded together. They can be the same kind of atoms (O_2) or different kinds of atoms (H_2O)

DIATOMIC elements - molecules occurring in nature consisting of two atoms (hydrogen, nitrogen, oxygen, fluorine, chlorine)

***All compounds are molecules
but not all molecules are compounds.
(O_2 vs H_2O)***

***Complete Concept Map Handout**