**Introduction to Fluids**

A fluid describes any substance that has the ability to “flow”. In order for a substance to flow, the particles that make it up must be able to move past each other in a steady stream when the substance is poured. An observer watching the substance being poured should not be able to distinguish between the individual particles as they slide past each other.

**Distinguishing Fluids from Non-Fluids**

Sort the following list into fluids and non-fluids based on your knowledge of their particles:

cotton, dish soap, paint, glass, oxygen, styrofoam, battery acid,

powdered laundry detergent, rubber, saliva (spit), juice, metal

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| --- | --- |
| Fluids | Non-Fluids |
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From the above chart, I conclude that fluids are made up of: [circle the best answer(s)]

solids liquids gases

**Viscosity of Fluids**

The speed at which a fluid flows is called its “viscosity”. The viscosity of a fluid is generally determined by how thick the particles of the fluid are compacted together. Some liquids have particles that are so tightly compacted they are almost considered solids.

The higher the viscosity of a fluid the “thicker” the fluid is and the slower it will move when it is poured. The lower the viscosity of a fluid the “thinner” the fluid will be and the faster it will move when it is poured.

Classify the following liquids into High Viscosity and Low Viscosity based on your knowledge of the “thickness” of their particles:

vinegar ketchup mustard water orange juice honey molasses

|  |  |
| --- | --- |
| **High Viscosity** | **Low Viscosity** |
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**The States of Matter**

There are 3 states of matter that all substances are classified into: solids, liquids and gases.

The classifications are based on how closely spaced the particles are that the substances are composed of.

Write a definition for each of the following words:

1. Solids =
2. Liquids =
3. Gases =

**The Particle Theory**

Scientists believe that there are 5 components of all substances that relate to particles. They call this list “The Particle Theory”.

1. All matter (solids, liquids and gases) are composed of small particles.
2. Different substances are composed of different particles (size and shape).
3. There are spaces between the particles that make up substances. The difference in the amount of space helps scientists to classify what type of substance it is.
4. Particles are always moving. As they gain energy (heat) they move faster and spread further apart. Conversely, as they lose energy they move slower and closer together.
5. The particles in a substance are “attracted” to each other and a force is necessary to break them apart. The force of attraction between the particles depends on the type of particles.