











1.0 *Fluids are used in Technological devices and common everyday materials*

- Key Concepts
- Workplace Hazardous Materials Information System (WHMIS) and safety
 - fluid properties

What does the acronym W.H.M.I.S. stand for?

W _____ H _____ M _____ I _____ S _____

Recognition of **WHMIS** symbols is important to lab safety. Identify the following WHMIS symbols.

| | | | |
|---|-------|---|-------|
|  | _____ |  | _____ |
|  | _____ |  | _____ |
|  | _____ |  | _____ |
|  | _____ |  | _____ |

Fluids are used in many different ways. Describe how fluids are used in the following processes:

Slurries _____

Glass Production _____

Toothpaste _____



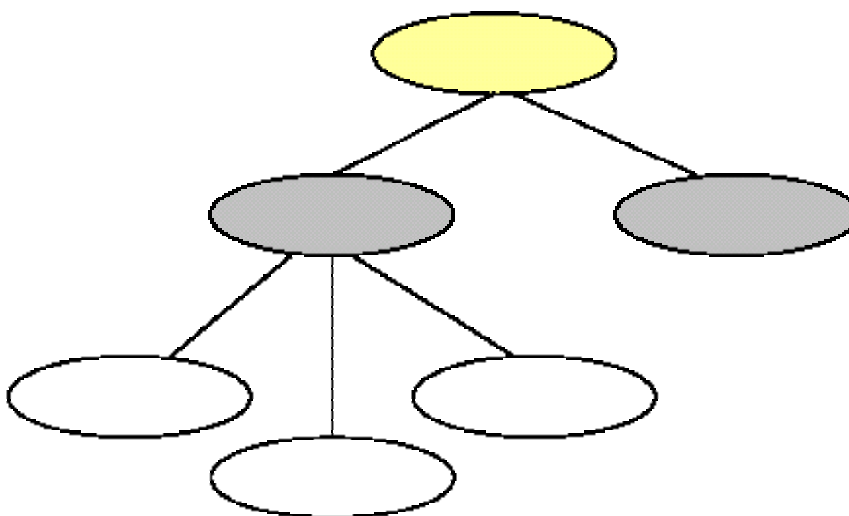
Give examples of practical applications for each of the following fluid properties:

| | | | |
|------------|--|--|--|
| viscosity | | | |
| density | | | |
| buoyancy | | | |
| hydraulics | | | |
| pneumatics | | | |

2.0 The properties of mixtures and fluids can be explained by the particle model of matter.

- Key Concepts
- organization of pure substances and mixtures
 - concentration and solubility
 - factors affecting solubility
 - The particle model

Matter can be organized in different ways. One way is as solids, liquids, and gases. Another way is as mixtures and solutions. Complete the Organizational Chart



Describe a **suspension**, a **colloid**, and an **emulsion**.



Describe the process of **paper chromatography** and give examples of practical applications.

What conditions must be present to enable a material to **dissolve** in another material?

Explain the difference between a **solute** and a **solvent**.

Describe the difference between **Concentration** and **Solubility**. (24-28)

What is a **saturated** solution? (p.21)

Why are some substances **insoluble**?

What factors affect **solubility**?

Why is water referred to as the **universal solvent**?

What is an **aqueous** solution?



How does **temperature** affect solubility?

The Particle Model of Matter (p.33)

What are the 4 key principles explained using the Particle Model of Matter?

Illustrate the action of particles in solids, liquids and gases.

| Solids | Liquids | Gases |
|--------|---------|-------|
| | | |

What factors affect the rate of dissolving?

3.0 *The properties of gases and liquids can be explained by the Particle Model of matter*

- Key Concepts
- Viscosity
 - Density
 - Buoyancy
 - Pressure

What is **viscosity**, how is it **measured**?



Describe some **practical applications** using knowledge about viscosity.

How is viscosity affected by **temperature**?

What formula is used to **calculate density**?

How are **mass and volume related**, when determining density?

Describe the density of solids liquids and gases, using the **particle model**.

What is **buoyancy** and how is it determined?

Describe how a ship (made out of steel) can **float**.

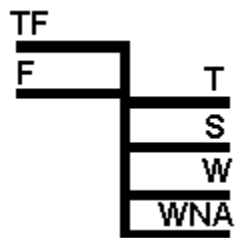


How does a '*cartesian diver*' work? (p.50)

What is **average density** and what benefits does it have?

Explain '*Archimedes Principle*' and how he came to formulate it (Eureka!).

The Plimsoll Line



Legend

- TF _____
- F _____
- T _____
- S _____
- W _____
- WNA _____

Describe how the **Plimsoll Line** works.

Describe how **Hot Air Balloons** use the principle of buoyancy.



Describe what **compressibility** is.

What conditions must be met to **compress** a gas?

Pascal's Law states:

Calculate pressure using a formula.

Provide some examples of the **advantages of compression**.

What effect does **atmospheric pressure** have on our body?

How is atmospheric pressure affected by **altitude**?



Describe the components needed to make a **hydraulic system**.

What is the primary difference between **hydraulic systems** and **pneumatic systems**?

4.0 Many technologies are based on the properties of fluids

- Key Concepts
- solubility
 - compression and decompression
 - flow rates to move fluids
 - factors affecting reaction rates

Explain how **detergent** works.

What is a **hyperbaric chamber**?

Illustrate and describe how the following technologies work to move fluids.

| | |
|--------------------------------|----------------------------|
| <i>Diaphragm Pump</i> | <i>Bicycle Pump</i> |
| <i>Archimedes Screw</i> | <i>Pipeline pig</i> |



What is a valve used for?

What is a bathyscaph?

Using pictures and a brief explanation describe how a submarine works. (p.71)
This website will help you - <http://www.physics.sfasu.edu/astro/social/social016.htm>

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