

Ch 3 HW: Sec Asses 50-56, Rev Con 70  
 Sec 3.4

obj: What determines the density of a substance?

### Density

- Compares the mass of an object to that object's volume.
- Physical property → Identifies the substance. (Intensive Property)
- Ratio btw the mass + Volume.  
 \* Ratio is written as a fraction.

9/17/02 7:44 AM

$$D = \frac{m}{V} \left( \frac{\text{Kg}}{\text{m}^3} \right)$$

- common units

$$\frac{\text{g}}{\text{cm}^3}$$

solid

$$\frac{\text{g}}{\text{mL}}$$

Liquid

$$\frac{\text{g}}{\text{L}}$$

gas

- The density of a substance will decrease as its temp. increases.

\* Thermal Expansion: causes an increase in volume.

9/16/2003 8:46 AM

Specific Gravity

- Compares the Density of a substance to the density of water.
- \* Mostly used to Identify Liquids.
- Physical Property (*Intensive*)
- Ratio of the Density of the substance to the Density of Water.

$$SG = \frac{\text{Density Substance } \cancel{\text{g/mL}}}{\text{Density of Water } \cancel{\text{g/mL}}}$$

\* Does not have units.

\* Density of Water equals  $1 \text{ g/mL}$

9/16/2003 8:56 AM

$$D_s = .89 \text{ g/mL}$$

$$D_w = \underline{1.0 \text{ g/mL}}$$

$$SG = ?$$

$$\begin{aligned} SG &= \frac{\text{density Substance}}{\text{density Water}} \\ &= \frac{.89 \cancel{\text{g/mL}}}{1.0 \cancel{\text{g/mL}}} \\ &= .89 \end{aligned}$$

9/16/2003 9:03 AM