Pre-lab Exercise KEY for ID a Liquid

An empty graduated cylinder weighs 26.80 ± 0.01 g. The mass of the graduated cylinder with 10.0 ± 0.1 mL of liquid in it is 34.07 ± 0.01 g. What is the mass of the liquid?

34.07 g
- 26.80 g

7.27 ± 0.01 g

If a graduated cylinder weighs 28.54 ± 0.01 g, and if the graduated cylinder containing 9.0 ± 0.1 mL of a liquid weighs 36.19 ± 0.01 g, what is the density of the liquid?

36.19 g
- 28.54 g
7.65 ± 0.01 g

7.65 g = 0.85 ± 0.01 g/mL
9.0 mL

A student determines that an unknown liquid has a density of 0.78 g/mL, a boiling point of 63.0 ± 0.1 ^{o}C, and it is soluble in water and in ethyl alcohol. Use the table on page 4 to identify the most likely candidate for the unknown liquid. What is the second most likely candidate for the unknown liquid?

#1 possibility: methyl alcohol (Density = 0.79 g/mL; BP = 64.7 ^{o}C; Soluble in both)

#2 possibility: acetone (Density = 0.79 g/mL; BP = 56.5 ^{o}C; Soluble in both)

Do any of the unknown liquids boil at temperatures above the boiling temperature of pure water?

NO

Where should you hold a thermometer when you want to insert it into a split-cork stopper?

Close to the tip (bulb).

List all of the precautions that must be taken when setting up and using the boiling point determination apparatus. Do not list "wear goggles." You must ALWAYS wear goggles when working with glassware and chemicals. Focus on safety and procedural precautions that are specific to the boiling point determination technique.

1. **Hold thermometer close to tip.**
2. **Insert thermometer into stopper gently.**
3. **Turn thermometer until scale can be read through split in stopper.**
4. **Put boiling chip into test tube with unknown liquid – to prevent "bumping".**
5. **Prevent test tube from touching sides of beaker.**
6. **Make sure unknown liquid level is below water level.**
7. **Vent vapors by putting tube into center sink.**
8. **Have instructor approve your set up.**
9. **DO NOT allow liquid to completely evaporate – you will not get an accurate temperature measurement.**