

SPECIFIC GRAVITY AND MINERAL IDENTIFICATION

- The Measurement of specific gravity is useful in helping to identify minerals.
- Specific Gravity is a ratio of the mineral's density compared to the density of water.
- Specific Gravity is a unit-less measure.
- Different minerals have different densities and thus different specific gravities.
- In this activity you will investigate how to calculate a mineral's specific gravity.

Procedure:

- 1. Weigh the mineral on a digital scale. Record the mass in grams.**
- 2. Fill the graduated cylinder with 60 ml of water.**
- 3. Place the mineral specimen into the graduated cylinder and record the mark where the water has risen to.**
- 4. Subtract the water mark value (from step 3) from the starting water mark value (60 ml).**
- 5. Take that value and divide it into the mineral's weight (step1).**
- 6. The calculated value represents the mineral's specific gravity. Record this value in a data table.**
- 7. Drain the water and the mineral into a plastic bucket and prepare the cylinder for the next mineral.**
- 8. When the specific gravity of all four minerals has been determined compare values with a table of accepted values and complete the questions.**
- 9. Clean up the lab station.**

Specific Gravity (SpG)

SpG = mass of the sample / the amt. of water displaced by the sample

Density of water is 1 g/cubic centimeter

Table 1				
Specimen	Mineral 1	Mineral 2	Mineral 3	Mineral 4
Mass (g)				
Amount of water displaced (ml)				
Specific Gravity (calculated)				
Mineral Name				
Specific Gravity (accepted value)				

Analysis and Conclusion: Questions. Please answer on a separate sheet and stable to this.

1. Were you able to identify any of the minerals in your bag by inspection prior to determining their specific gravities? If so describe what physical properties helped you to identify it.
2. What sources of error in the experiment might account for any differences from the accepted value of the specific gravity for each mineral?
3. Why does the water mark on the graduated cylinder increase when the mineral is dropped in?

4. If you held a sample of sulfur in one hand and an equal sized sample of Galena in the other hand, which would feel heavier? Use the word *specific gravity* in your response.

5. Explain how a liquid with a specific gravity of 5.1 can be used to distinguish pyrite from magnetite? (if you know the SpG of pyrite is 5.0 and the SpG of magnetite is 5.2).

6. If you were identifying a valuable gemstone, why is a specific gravity test more likely to be performed than a test for streak or hardness?