Specific Gravity

- The mass of a mineral compared to that of an equal volume of water
- To determine specific gravity you need to carry out the following three steps:

weigh the specimen in air and record the weight.

 weigh the specimen submerged in water and record the weight.





3. calculate specific gravity (S.G.) using the following formula.

• Specific Gravity = <u>weight in air</u> weight in air - weight in water

Specific Gravity = Density

Note: (In Reference to Core Lab #4)

Because pure water has a density of 1 g/cm³, the specific gravity is equal to its density. Thus, Specific gravity = Density.

To get density you must

- Use a scale to measure the mass of the mineral sample.
- Find the volume of the mineral sample.
- Calculate density (which equals specific gravity).

Density =
$$\frac{Mass}{Volume_{(mineral)}}$$
 = Specific Gravity

Example

• Given: $1mL = 1cm^3 = 1g$, we know the weight of an equal volume of water in grams. We can then use the following formula to calculate Specific Gravity:





Specific gravity = 7.5

Sample is 7¹/₂ times heavier than an equal volume of water





Specific gravity = 2.5

Sample is $2\frac{1}{2}$ times heavier than an equal volume of water

Calculation

S.G. = W(mineral)W(water)

Mineral sample weighs 250 grams

Other Properties

 These physical properties can be helpful to identify minerals that are similar:

 Taste - what the actual mineral taste like. Ex. Halite (rock salt) taste salty.





Taste

 Magnetism - if a mineral is magnetic or not. Ex. Magnetite (Loadstone).



Magnetism

 Acid Test - drop acid on the sample to see if the mineral reacts (fizzes). Used to test the Carbonate group. Ex. Calcite (Limestone)

• Feel - what the mineral feels like. *Ex. Graphite -*







Sample Problem

• Explain how the specific gravity of a mineral is determined. Answer:

Specific gravity compares weight of mineral to weight of equal volume of H_2O .

(1) find the mass of the mineral; using a scale or balance.
(2) find the volume of the mineral; water displacement method.
(3) find the weight of mineral in water; by suspending mineral from spring scale and weighing it immersed in water.
(4) use the formula;

S.G. = density = m/v or;
S.G. = weight of mineral in air
(weight in air) - (weight in
$$H_2O$$
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