

Science Starters at Home
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Density

Have you ever noticed that some things float in water and some things don't? Scientists call this principle density. Everything has a density. Density is mathematical relationship of the mass of the object compared to its volume. Water has a density of 1g/cc and the density of other things is usually compared to water. Some things are denser than water and they sink. They have a density greater than 1. Other things are less dense than water and they float. Their density is less than 1.

Try this at home

Create a density column

Materials

Water, colored with food coloring
Corn syrup
Vegetable oil
Clear glass or bottle
Objects to test (such as grapes, corks, pasta, raisins, etc)

1. In the clean glass or bottle, pour the corn syrup into the container until it is $\frac{1}{4}$ full.
2. Slowly pour in the same amount of oil into the container.
3. Finally add the same amount of colored water.
4. The 3 liquids should separate out into 3 distinct layers.
5. Test common household objects to see if they float or sink in the density column. Different objects should float at different levels in the column.
6. Keep a data table of your results.
7. Try sprinkling some table salt on the surface. What happens?

Caution: Adult supervision is recommended.

What is going on?

All objects have a density. Water has a density of 1g/cc. Vegetable oil has a density less than water so it floats on top of the water. Corn syrup has a density greater than water so it sinks below the water. Objects will sink until they reach a liquid of a higher density than themselves. They will then float on top of that liquid. Use your density column to figure out the density of the objects relative to the 3 liquids.

Material	Density
Rubbing Alcohol	.79
Lamp Oil	.80
Baby Oil	.83
Vegetable Oil	.92
Ice Cube	.92

Water	1.00
Milk	1.03
Dawn Dish Soap	1.06
Light Corn Syrup	1.33
Maple Syrup	1.37
Honey	1.42

Want More?

Internet Links:

<http://www.brainpopjr.com/science/forces/sinkorfloat/grownups.weml>

http://www.bbc.co.uk/schools/digger/5_7entry/8.shtml

<http://www.kids-science-experiments.com/floatorsinkexercise.html>

Check out these books:

Literature Connection:

Will It Float or Sink? (Rookie Read-About Science), by Melissa Stewart, Children's Press, 2006.

Who Sank the Boat? (Paperstar), by Pamela Allen, Puffin, 1996.

Floating and Sinking (First Facts, Our Physical World), by Niz, Capstone Press, 2006.

Internet Sources Used for this Science Starter:

<http://hyperphysics.phy-astr.gsu.edu/hbase/tables/density.html>

<http://www.stevespanglerscience.com/experiment/seven-layer-density-column>