

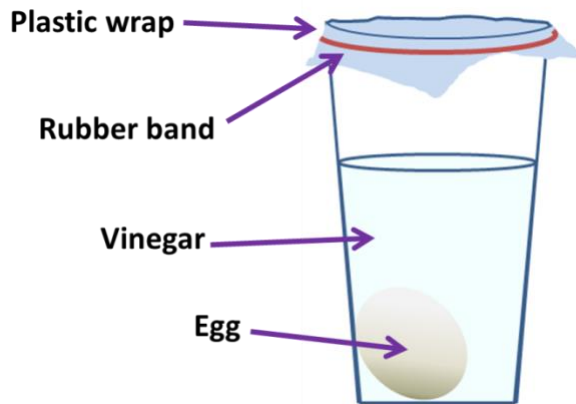
DIY Air Force Activities:

Egg-cellent Experiment



Materials:

- hardboiled egg
- tall glass
- white vinegar
- plastic wrap
- rubber band
- flashlight
- Optional extension: see pH indicator materials, corn syrup or honey.



Directions

1. Have an adult hard boil an egg. Allow the egg to cool.
2. Place the egg in a glass and pour white vinegar over it until it is submerged.
3. Make observations! What do you see?
4. Cover the glass using the plastic wrap and rubber band and place it in the fridge for 24 hours.
5. The next day, carefully pour off the vinegar and replace it with fresh vinegar. Place the glass back in the fridge and leave it for 7 more days. Make observations each day.
6. Pour out the vinegar and remove your egg. What happened to the shell?? Hold the egg up to your flashlight, what do you see? Try to bounce it off the table!

Vinegar is an acid, acetic acid to be specific. The vinegar we buy at the store is diluted, or mixed with water. It literally ate away the shell of the egg! This is because the eggshell is made of a substance called calcium carbonate. When the acid (vinegar) comes into contact with the shell a chemical reaction occurs. Did you notice the bubbles on the shell? This was carbon dioxide being produced! Water and a salt (calcium acetate) are also formed. This experiment also works with raw eggs, although your resulting egg is very fragile! Experiment with other liquids (cola or lemon juice) and different types of eggs (brown, white, or free range). Do you get similar results? Does it take the same amount of time? Remember to only change one factor at a time! Try our pH indicator DIY to discover other acids. You can expand on our osmosis DIY by putting your “naked” egg in corn syrup or honey.

Air Force Associations:

Corrosion is a big (and costly) problem for the air force. When metal corrodes, it loses its structural integrity, or becomes weak. This can lead to catastrophic failure for aircraft. Environmental factors, such as acid rain, pollution, sand, and salt, can all lead to corrosion. To mitigate this, special coatings and materials are developed. Keeping aircraft clean is also essential! The frequency in which the aircraft must be cleaned is dependent upon the harshness or the operating environment.