

Observing the Properties of Water

I. Purpose: To observe 2 properties of water: cohesive strength and surface tension.

II. Background Information: Water is the most important compound in organisms. The human body is 67% water. 70% of your skin is made of water. You can survive only 5 to 7 days without water. Water exhibits several properties:

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| <i>a. Polar</i> | <i>e. High heat of vaporization</i> |
| <i>b. Cohesive</i> | <i>f. Resistance to temperature change</i> |
| <i>c. Adhesive</i> | <i>g. Expands when freezes</i> |
| <i>d. High surface tension</i> | <i>h. Versatile solvent</i> |

You will be observing water's cohesive nature & its high surface tension in today's lab.

- III. Materials:**
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|----------------------|--------------------|
| • Penny | • Corn oil |
| • Paper towel | • 95-100% ethanol |
| • Water | • Small paper clip |
| • Dropper or pipette | • Beaker |
| • Wax paper | • Soapy water |

IV. Procedure:

1. Place a penny on a paper towel. Slowly drop water (using your dropper) onto the penny, one drop at a time. Count the number of drops that fit on top of the penny. Record this in **Table 1**.
2. Dry the penny completely and repeat step 1, using soapy water. Record the # of drops in **Table 1**.
3. Obtain a piece of wax paper. Raise your hand and I will place a drop of corn oil on the paper. Place a smaller drop of water on top of the corn oil. Record your observations in **Table 1**.
4. Now, add a drop of alcohol so that it just touches the corn oil drop. Record your observations in **Table 1**.
5. Take a small paper clip and gently lay it horizontally on the surface of the plain water in a large container. Record your observations in **Table 1**.

V. Data & Observations:

Table 1. Observations of Water Cohesiveness & Surface Tension.

	<i># Drops</i>	<i>Observations</i>
Regular Water on Penny		
Soapy Water on Penny		
Regular Water on Corn Oil		
Alcohol on Corn Oil + Water		
Paper Clip in Beaker		

VI. Analysis & Conclusions:

1. Which substance, water or soapy water, is the most cohesive? How do you know? Explain, using your results and observations.
2. Does alcohol reduce the cohesive strength of water? How do you know? Explain, using your results and observations.
3. Considering the properties of water (esp. surface tension), give an explanation for your observations of the paper clip and water.