

Floating Golf Ball

A Chemical Mystery

Purpose

To challenge students to explain why a golf ball slowly levitates in a salt water solution.

Materials

1 L hydrometer	golf ball
coarse grain non-iodized salt	Parafilm

Procedure

1. Pour 70-80 mL of water into hydrometer.
2. Add enough salt to make a wet salt layer on the bottom of the hydrometer (15-20% of cylinder).
3. Using a wire loop carefully lower the golf ball to the top of the wet salt layer.
4. Fill the cylinder by trickling water down the side (to avoid disturbing salt layer) to 1-2 cm from the top.
5. With a permanent marker, mark and date these levels:
 - a. top of water layer
 - b. top of salt layer
 - c. top of golf ball.
6. Cover top of cylinder with Parafilm.
7. After the instructor poses the puzzle to the students, place the cylinder in the hall in glass case.
8. Mark and date the levels in 6 a, b, c on a weekly basis.

Additional Information

1. The golf ball will rise above the saturated salt solution forming from the bottom of the cylinder.
2. Density of a golf ball 1.15 g/mL
Density of saturated salt solution—1.20 g/mL
3. Diameter of the cylinder affects the rate of mixing and therefore the rising of the golf ball.

Questions for the Students

1. Show the students the apparatus without explanation of what should happen. Ask them to predict what will happen over time:
 - a. to the water level
 - b. to the salt level
 - c. to the golf ball.
2. After at least a week has passed, compare your predictions to your observations.
3. Explain what is happening in the hydrometer in terms of density and dissolving.

Disposal

Solutions can be poured down the drain with excess water.

Reference

Becker, B. Twenty Demonstrations Guaranteed to Knock Your Socks Off! 1994.