

Float an aluminium boat on gas!

(Belgium)

Background

Sulfur Hexafluoride (SF_6) is a colourless, odourless inert gas. The gas is more dense than air. Sulfur Hexafluoride (SF_6) is normally used in the demonstration to float an aluminium boat on gas, however, Sulfur Hexafluoride is expensive and difficult to get. Air Duster PRF 4-44 Green is a cheaper alternative containing tetrafluoropropene which is also more dense than air.

You will need:

- ✓ Non-flammable Air Duster PRF 4-44 Green (Contains tetrafluoro-propene)
- ✓ Thin aluminium foil
- ✓ Fish tank/large plastic tub

Follow these steps:

1. Set up the experiment in a well ventilated area and away from draughts.
2. Create a boat using thin aluminium foil. Fold up the sides and smooth the corners of the boat.
3. Spray the Air Duster PRF 4-44 Green into a large transparent container.
4. Place the aluminium foil boat into the large container containing the Air Duster PRF 4-44 Green spray.
5. Observe what happens.

So what happened?

The aluminium boat floats on the colourless gas. It is worth noting that an object will float if the gravitational (downward) force is less than the buoyancy (upward) force. In this case, the Air Duster PRF 4-44 Green gas sinks to the bottom of the container as is more dense than air.



What next?

- Fill a small beaker with the gas at the bottom of the large container. Pour the gas from the small beaker into the aluminium boat. Will the boat sink or stay afloat?
- Remove the aluminium boat and blow bubbles over the large container containing the dense gas. Notice what happens.

