Density Paradox Set U45056

Instructions

05/11 ALF

1. Safety instruction

This experiment uses hot water. Risk of scalding!

- Be careful using hot water.

2. Description

The density paradox set consists of two identical plastic cylinders with hooks, which have a density close to that of water.

3. Technical data

Length:	60 mm approx.
Diameter:	20 mm approx.
Weight:	8 g each approx.

4. Operation

The following equipment is also required to carry out this experiment:
2 Beakers from U14210 (set of 10 beakers)
String

- Tie some string to both cylinders.
- Fill one beaker with hot water and the other with very cold water.
- Dangle both cylinders in the beaker with the hot water.

The cylinders initially sink, but after a short time they rise back to the surface.

- Take the cylinders out of the hot water and dangle them in the beaker with the cold water.

The cylinders initially float but shortly afterwards they sink to the bottom.

Explanation:

Unlike liquids, the density of most solid bodies undergoes little change. The material from which the two plastic cylinders are made is an exception to this which leads to their apparently paradoxical behaviour. The cylinders sink in hot water because the water is less dense than they are. Heat causes the cylinders to expand so that their density decreases to less than that of the hot water. This is why they rise to the surface and float after a while. In cold water, the cooling causes the density to increase to more than that of the cold water.