# DENSITY AND TEMPERATURE (DENSITY BODY)

**MED 01.12**


***Material:***

| Item-no. | Qty. | Description |
|---|---|---|
| DS090-1K | 1 | Claw base simple, L=200 mm |
| P7240-1G | 1 | Support rod, round, L=500 mm, D=10 mm |
| DS400-3K | 1 | Bosshead cross-pattern, Demo, green |
| C7002-1A | 1 | Universal clamp, 0 - 80 mm |
| C7414-2B | 1 | Hot plate |
| C1010-1H | 2 | Beaker glass, 1000 ml, tall form, Borosilicate |
| DM480-1D | 1 | Density cylinder |
| C7415-4Z | 1 | Beaker tongs, stainless steel |
| DE723-2T | 1 | Thermometer differential, inno |
| DT202-5S | 1 | Thermo-sensor, with handle, DIN |
| P3120-5B | 1 | S-shaped assembly platform |

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**Purpose**
Investigating the relationship between density and temperature of a liquid - density comparison through swimming behaviour.

**Preparation**
Insert the 50 cm rod into the claw base; afterwards fix the cross-patterned bosshead to the support rod.


Mount the universal clamp at the bosshead, afterwards place the thermometer on the S-shaped assembly platform for a better visibility.

Pour 1000 ml of water into the beaker and place it on the hot plate.

Connect the temperature sensor to the left bush of the thermometer and mount the thermometer in the universal clamp so that the tip of the thermometer is inside the beaker.

**Experiment 1**
Put the density cylinder in the beaker; it should swim. Afterwards put the switch on the thermometer to the left („t1“-setting).


Now turn the thermometer on and observe the raise of the water temperature.

Turn on the hot plate on the highest possible heating level and observe the temperature and the density body.

At a temperature of approx. …. °C the density body starts to sink.

**Conclusion**
The density body swims in cold water but sinks in hot water.

**Experiment 2**
If you let the hot water cool down (accelerate with ice cubes), the density body slowly begins to rise. The associated temperature can be read on the thermometer.

**Experiment 3**
Pour 500 ml of ice water into the beaker and prepare another 500 ml of boiling water. Pour the boiling water carefully in the beaker. Place the density body with the help of the beaker tongs on the water surface.

**Conclusion**
The density body sinks thought the layer with hot water and then levels off at the boundary layer.