

Heat transfer
Heat convection

Demonstrating heat convection in water

Object of the experiment

1. Demonstrating the heat convection in a liquid caused by uneven warming

Setup**Observation**

The coloured water starts circulating in the tube.

Evaluation

The water warmed up in the tube expands.

Therefore its density decreases, and it rises in the leg of the tube.

When the water has left the heat source, it cools down and, due to its increased density, sinks in the other leg of the tube.

Because of the temperature differences in the water, heat convection arises in the tube.

Apparatus

1 Convection apparatus	389 18
1 Colouring, red, 10 g	309 42
1 Spoon-ended spatula, stainless steel, 120 mm	666 963
1 Measuring beaker, PP, 1000 ml	604 211
1 Stand rod, 75 cm, 12 mm diam.	300 43
1 Leybold multiclamp	301 01
1 Universal clamp	666 555
1 Stand base, V-shape, small	300 02
1 Butane gas burner	666 711
1 Butane cartridge, 190 g, set of 3	666 712ET3

Carrying out the experiment

- Set up the glass tube in the stand material, and fill it with water.
- Using the spatula put some colouring into the fitting.
- Warm the glass tube at one of the lower corners with small, non-luminous flame.
- Observe the coloured water in the glass tube.