

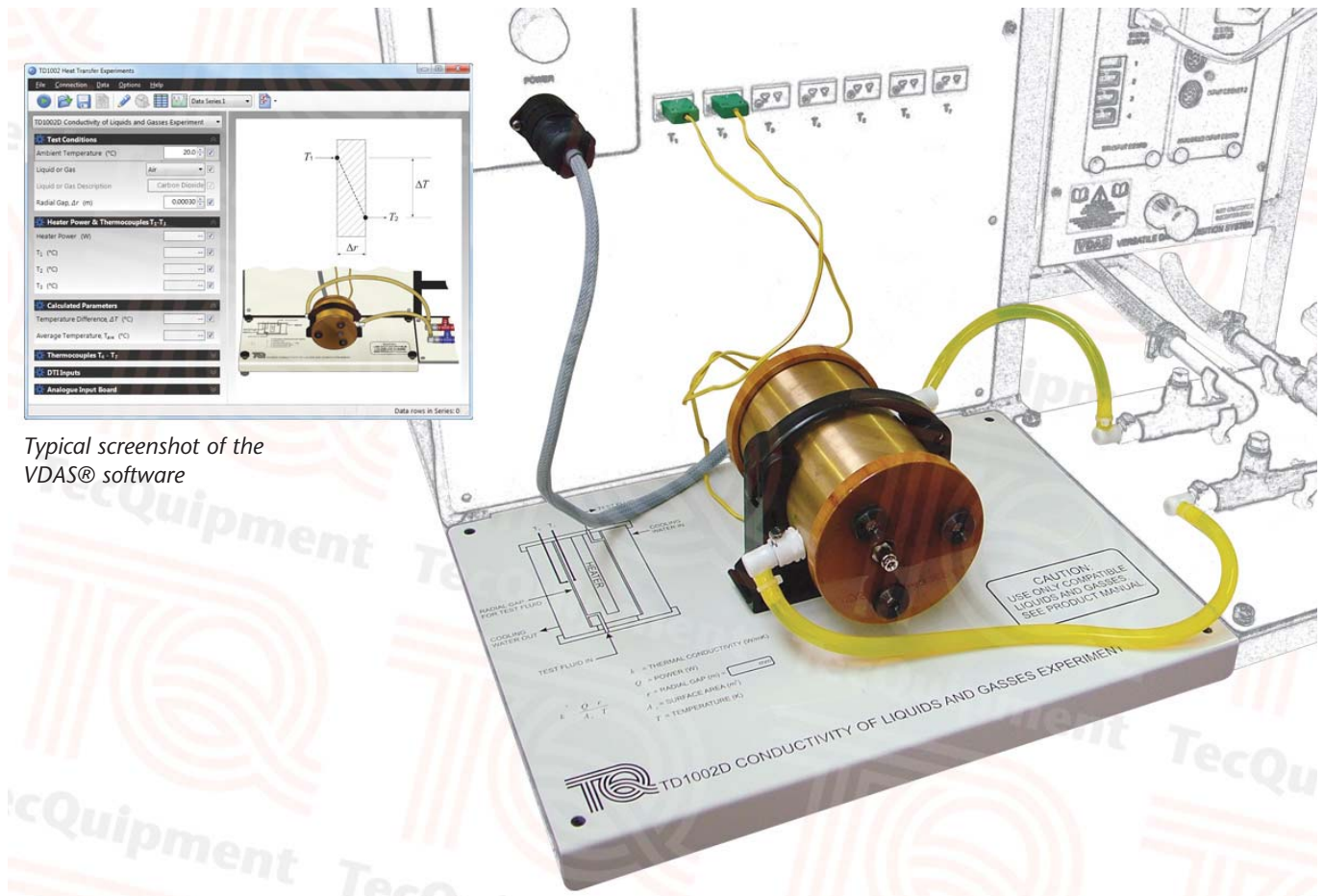


## Thermodynamics

## TD1002d

## Conductivity of Liquids and Gasses Experiment

**Allows students to test various fluids to find their thermal conductivity**



Typical screenshot of the Vidas® software

- One of four optional experiments for the Heat Transfer Experiments base unit (TD1002)
- Fits quickly and easily onto the Heat Transfer Experiments base unit and water connections have self-sealing quick connectors – needs no tools
- Allows students to measure the thermal conductivity of various compatible liquids and gasses
- Clear schematic printed on the baseplate aids student understanding
- Easy to disassemble and clean
- Safe, low-voltage heater with over-temperature cut-out

- TecEquipment Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK
- T +44 115 972 2611 • F +44 115 973 1520 • E info@tecequipment.com • W www.tecequipment.com
- An ISO 9001 certified company

# TD1002d

## Conductivity of Liquids and Gasses Experiment

### Description

This experiment has three concentric cylinders. The inner cylinder contains an electric heater (the heat source). The test liquid or gas forms a second, thin cylinder around the heat source. The third cylinder cooled by water surrounds them both to make a heat sink. The whole assembly is mounted on a base plate with a clear schematic of the experiment layout.

Heat passes by conduction from the heat source, through the test liquid or gas, to the heat sink. Thermocouples measure the temperature on the inside and outside edges of the cylinder of test liquid or gas.

The electric heater and thermocouples connect to sockets on the Heat Transfer experiments base unit, which also supplies the cold water feed and drain for the heat sink

Caps of thermally-insulating material at the ends of the cylinders reduce heat loss, but students do an initial experiment to calibrate the equipment to allow for heat losses and improve experiment accuracy. One end cap is removable to allow the unit to be easily cleaned when changing from one fluid to another.

Students turn on the cooling water and the heater and measure the temperatures at each side of the test gas or liquid. They then compare their results with those predicted from theory for conduction in liquids and gasses.

**Note:** The TD1002d equipment is made of brass, aluminium, tufnol, nylon and nickel-plated parts. For safety reasons and to avoid damage to the equipment, only use test fluids that will not damage or react with the materials used to make the TD1002d. TecQuipment does not supply and cannot be held responsible for the test fluids that you use.

Suitable test fluids include:

- Normal, dry air
- Carbon dioxide
- Castor oil

### Standard Features

- Five-year warranty
- Made in accordance with the latest European Union directives

### Experiments

- Calibration of the unit using air as the known medium
- Finding the thermal conductivity ( $k$ ) of various liquids and gasses and comparing them to typical published values

### Essential Base Unit

- Heat Transfer Experiments Base Unit (TD1002)

### Operating Conditions

*Operating environment:*

Laboratory

*Storage temperature range:*

-25°C to +55°C (when packed for transport)

*Operating temperature range:*

+5°C to +40°C

*Operating relative humidity range:*

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

### Sound Levels

Less than 70 dB(A)

### Technical Details

*Nett dimensions and weights:*

Conductivity of Liquids and Gasses Experiment (TD1002d):  
430 mm x 280 mm x 150 mm high and 6 kg

- TecQuipment Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK
- **T** +44 115 972 2611 • **F** +44 115 973 1520 • **E** info@tecquipment.com • **W** www.tecquipment.com
- An ISO 9001 certified company



*tradition.*

*innovation.*

*integration.*

**infoWERK** is a leading expert in the development of eLearning courseware, learning system solutions, teaching and AV equipment.

**Furthermore infoWERK is the representative and system integrator of "TecQuipment".**

**TecQuipment** is one of the global leaders in technical teaching equipment for engineering. If you are interested in one of TecQuipment's products feel free to contact us at:



**infoWERK Medien & Technik GmbH**

**Martinsbühel 6 / A-6170 Zirl / Austria**

Phone: +43 (0) 5238 52099-0 / Fax: +43 (0) 5238 52099-40

E-Mail: [info@infowerk.at](mailto:info@infowerk.at) / Website: [infowerk.at](http://infowerk.at)

**Otto-Dürr-Straße 25**

**D-70435 Stuttgart, Zuffenhausen/ Germany**

Phone: +49 (0) 711 342471-0 / Fax: +49 (0) 711 342471-11

E-Mail: [info@de.infowerk.at](mailto:info@de.infowerk.at) / Website: [infowerk.at](http://infowerk.at)