SCIENTICO INDIA
Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Thermal Conductivity of Liquid & Gases | ThermoFlux 7035

Category: Thermodynamics Lab Equipment · **Order Code:** THERMOFLUX 7035 · **Country of Origin:** India

Product Overview

A CE-certified apparatus for experimental study of linear and radial heat conduction and determination of thermal conductivity of materials, manufactured by Scientico India to ISO 9001:2015 standards. Supplied with calibration certificate, operation manual, and complete export documentation. Designed for Thermodynamics Lab Equipment laboratories in engineering colleges and technical institutions.

View this product online: https://scienticoindia.com/product/thermal-conductivity-of-liquid-gases-thermoflux-7035/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Thermal Conductivity of Liquid & Gases ThermoFlux 7035, Technical Specifications

Parameter	Detail
Model	ThermoFlux 7035
Test Fluids	Water, oil, air, carbon dioxide
Annular Gap	0.4 mm radial clearance between two coaxial cylinders
Inner Cylinder Heating	Continuous electrical heating via cartridge heater
Outer Cylinder Cooling	Water-cooled jacket
Temperature Display	Digital, on control panel
Heater Power Display	Digital, on control panel
Power Control	Potentiometer (variable transformer)

Technical Data

Test Module

Parameter	Detail
Configuration	Two cylindrical plugs assembled with 0.4 mm gap
Jacket Type	Cylindrical water-cooled jacket

Inner Cylinder Plug

Parameter	Value
Outer Diameter	33.3 mm
Length	120 mm
Material	Copper

Outer Cylinder Plug

Parameter	Value
Inner Diameter	34.1 mm
Length	100 mm
Material	Copper

Cartridge Heater

Parameter	Value
Power	150 W
Temperature Limitation	150 °C
Safety	High-temperature cut-off via temperature controller

Temperature Instrumentation

Parameter	Value
Sensor Type	Type K Thermocouple
Calibrated Range	-100 ~ 400 °C

Cylindrical Water Jacket

Parameter	Value
Material	Stainless steel

Control Panel

Parameter	Detail
Includes	Variable transformer, power transducer, temperature controllers/indicator
Indicators	Digital displays for temperatures and heater power
Selector	Thermocouple selector switch
Wiring	All necessary electrical wiring included

Key Features

Key Features

- **Thermal conductivity investigation:** Designed for direct experimental determination of thermal conductivity (k) of common fluids, water, oil, air, and carbon dioxide, using the **Thermal Conductivity of Liquid & Gases ThermoFlux 7035**
- **0.4 mm annular gap:** Extremely narrow radial clearance between coaxial cylinders minimises natural convection, isolating conductive heat transfer
- **Coaxial concentric cylinder design:** Two copper cylindrical plugs, inner (Ø 33.3 mm, 120 mm length) and outer (Ø 34.1 mm, 100 mm length)
- **Continuous electrical heating:** Inner cylinder heated via 150 W cartridge heater with 150 °C temperature limit
- **High-temperature safety cut-off:** Automatic protection via integrated temperature controller
- **Water-cooled outer cylinder:** Stainless steel jacket with water inlet and drain connections

- **Type K thermocouple instrumentation:** Three thermocouples positioned across heating and cooling cylinders; calibrated range -100 ~ 400 °C
- **Digital control panel:** Displays temperature readings and heater power; includes potentiometer for variable power control, thermocouple selector switch, variable transformer, and power transducer
- **Two fluid ports:** Inner copper plug includes ports for introducing and venting the test fluid
- **Optional DAQ software:** ThermoFlux 7035, developed in National Instruments™ LabVIEW™ environment; compatible with all Windows™ versions

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Experiments

- Calibration of the unit to establish the effect of incidental heat transfer
- Determining the thermal conductivity (k) of various liquids and gases
- Steady heat conduction in gases and liquids:
  - Determine the thermal resistance of fluids
  - Determination of thermal conductivity (k) for different fluids at different temperatures
- Transient heat conduction in fluids:
  - Interpret transient states during heating and cooling
  - Introduction to transient heat conduction with the block capacity model

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Construction and Design

The **Thermal Conductivity of Liquid & Gases ThermoFlux 7035** is constructed around two coaxial concentric copper cylindrical plugs separated by a precisely controlled 0.4 mm radial gap, the core functional element of this **Thermal Conductivity of Liquid & Gases** apparatus. The inner plug (Ø 33.3 mm, 120 mm long) is continuously electrically heated via a 150 W cartridge heater protected by a high-temperature cut-off controller. The outer plug (Ø 34.1 mm, 100 mm long) is enclosed within a stainless steel water-cooled cylindrical jacket equipped with inlet and drain connections. Both copper plugs carry two ports for fluid introduction and venting. Three Type K thermocouples, calibrated from -100 ~ 400 °C, are positioned across the heating and cooling cylinders to capture hot and cold face temperatures of the test fluid precisely. The test module connects to a control panel housing a variable transformer, power transducer, temperature controllers, digital indicators for temperature and heater power, and a thermocouple selector switch.

Software

ThermoFlux 7035 *(Optional)*

- DAQ software specially designed in the National Instruments™ LabVIEW™ environment
- Measures and calculates experimental results from the apparatus
- Includes a set of electronic sensors when the software option is selected
- Compatible with all Windows™ environments

Scope of Delivery

- 1 × Experiment unit
- 1 × Syringe
- 1 × Instruction manual

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q1. What fluids can be tested with the Thermal Conductivity of Liquid & Gases ThermoFlux 7035?
The unit is designed to test common fluids including water, oil, air, and carbon dioxide.

Q2. Why is the annular gap set to 0.4 mm?
The 0.4 mm radial clearance between the two coaxial cylinders is intentionally made extremely small to reduce natural convection, ensuring that heat transfer through the test fluid occurs predominantly by conduction.

Q3. What type of temperature sensors are used in the ThermoFlux 7035?
The apparatus uses Type K thermocouples with a calibrated range of -100 ~ 400 °C. Three thermocouples are positioned across the

heating and cooling cylindrical plugs.

Q4. What safety feature is built into the heater?

The 150 W cartridge heater is protected by a high-temperature cut-off mechanism via an integrated temperature controller, with a maximum operating limit of 150 °C.

Q5. Is DAQ software available for this unit?

Yes. Optional DAQ software (ThermoFlux 7035) is available, developed in the National Instruments™ LabVIEW™ environment and compatible with all Windows™ versions. A set of electronic sensors is included when the software option is selected.

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