



## Thermal Conductivity of Insulating Powder Apparatus (SMT-HT-29)

This unit has been specially designed to allow students to experimentally determine the thermal conductivity of insulating powders such as magnesium oxide, mica and kaolin. This complete benchtop unit comes with stainless steel test module containing insulating powders to be determined their thermal conductivities.

The test module is supplied with a 200 W variable input cartridge heater. Test module is fitted with temperature sensors for measurements of T1 and T2. A proper insulating material is fitted inside the test module to ensure heat transfer is in the radial direction only. The unit has a control panel with digital LCD indicators for temperatures and heater power, a thermocouple selector switch, and a heater power controller.

The unit has Touch LCD display for visualization of process and the measurements. The Unit is also connected to Software for computer connectivity and data analysis. The Touch screen and computer software is included in the package.

## TECHNICAL SPECIFICATIONS

### Specifications:

- Complete stand-alone unit to demonstrate and measurement of Thermal Conductivity of Insulating Powder.
- Touch LCD 7" with GUI Interface for better monitoring and accurate measurement of Plant variables.
- DAQ Software for PC Connect and Data measurement and Calculations.
- The complete unit includes the followings:
- Bench:
  - Made of high quality and sturdy formica laminated.
  - Panel on which main components are mounted.
- Test Module:
  - Test module is supplied made of two concentric stainless-steel cylinders.
  - The test module is fitted with top cover made of stainless steel and Teflon seals at the top and bottom section.
  - The test module is pre-filled with test powder to be determines its thermal conductivity.



- **Heater:**
  - Type: high temperature cartridge heater.
  - Power: 200 W, with built-in temperature sensor.
  - Control: 0 to 200 W by means of a variable transformer.
  - Safety: High temperature cut-out by means of a temperature controller.
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- **Instrumentations:**
  - The unit is supplied with 6 temperature sensors for test module. A selector switch is provided to allow students to read temperatures at various points.
- **Control Panel:**
  - The control panel includes all necessary electrical wiring with variable heater control, power transducer, temperature controller/indicator, digital indicators for temperatures and heater power, and thermocouple selector switch.

## Experiments:

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- The unit allows students to do the following experiments:
  - To determine the thermal conductivity of insulating powders.
  - To compare the experimental results with known values if available.