



THE LAB EQUIPMENT

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Product Name :

Emissivity Natural Convection And
Radiation

Product Code :

SLE/EA/10



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Description :

- The Natural Convection and Radiation equipment allows the study of heat transfer at different pressures and vacuum. It shows the differences between radiation and natural 'free' convection.
- A small heated element hangs in the centre of a pressure vessel.
- Students can extrapolate the results down to a total vacuum (no convection).
- This allows them to isolate the heat transfer by radiation.
- The heater has a matt black surface.
- Attached to its surface is a thermocouple to measure the temperature.
- The vessel's inside is also black, and it has a thermocouple fitted to its wall to measure the temperature in the vessel.
- It allows students to find the emissivity of a surface and verify the Stefan-Boltzman equation.
- It also gives students an understanding of the non-dimensional characteristics using Nusselt, Grasof, Prandtl and Knudsen numbers.
- The vessel may be charged with compressed air up to 1 bar (gauge) or evacuated down to about 5 Pa (absolute).
- Instruments and a digital display measure and display the temperatures, pressures and power to the element.
- To give accurate measurements of pressure and vacuum, the equipment has two different pressure transducers - one for pressures above atmospheric and one for pressures below atmospheric.

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