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Product Name :

Unsteady State Heat Transfer

Product Code :

SLE/EA/19



Description :

Unsteady State Heat Transfer (Product Code: SLE/EA/19) is a transient heat transfer apparatus used to measure the temperature changes in solid test shapes suddenly immersed in a temperature-controlled water vessel in engineering laboratories. Its test shapes differ in dimensions and material, so students see how surface area, shape and thermal conductivity alter the rate of heat transfer. It is made by **Jain Scientific Equipments Pvt Ltd (ScienceLab)**, an OEM engineering lab equipment manufacturer, at its own factory in Ambala, India.

Key Details

Parameter	Detail
Heating control	Controller switches the electric heater to keep a constant bulk water temperature in the vessel
Test condition	Temperature controller maintains a constant water temperature for the test shape
Test shapes	Different dimensions and materials, giving different heat transfer areas and thermal conductivities
Method	Sudden immersion of a test shape, with measurement of the resulting transient temperature changes
Bath stability	Large water volume compared with the test shapes, so immersion has a negligible effect on the bulk temperature
Instrumentation	Precision instruments measure temperatures at key points, shown on clear multi-line displays
Scope	Multiple experiments in heat transfer
Product code	SLE/EA/19
Manufacturer	Jain Scientific Equipments Pvt Ltd (ScienceLab) — OEM
Country of origin	India (made in Ambala, Haryana)

What Is the Unsteady State Heat Transfer Apparatus Used For?

Many real heating and cooling processes, from quenching a metal part to warming food, never reach a steady state, and this apparatus lets students study that transient behaviour directly. They immerse one test shape, record how its temperature changes with time, then repeat with the other shapes and compare the curves. The exercise goes a step beyond a simple Newton law of cooling apparatus, because shape and material become variables as well.

The results can be checked against lumped-capacitance and transient conduction theory, introducing ideas such as the Biot number. Let the water reach its controlled temperature and start each shape from the same initial condition, so the comparison between shapes stays fair.

OEM Manufacturer

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