



P5687

THERMAL CONDUCTIVITY APPARATUS

INTRODUCTION

Cussons P5687 Thermal Conductivity Apparatus is one of a series of Heat Transfer experiments designed for bench top use. It allows students to calculate heat flows and temperature gradients along various cylindrical specimens of relatively high conductivity, such as metals, and across thin sections of insulating material that may be attached to one end of a metal specimen.

PRINCIPLE EXPERIMENTS

- ◆ To demonstrate that heat flow is directly proportional to temperature differences between specimen faces
- ◆ To demonstrate that heat flow is directly proportional to cross sectional area
- ◆ To derive the thermal conductivity of materials of high thermal conductance
- ◆ To determine the thermal conductivity of insulation materials

DESCRIPTION

The apparatus consists of a vertical stack of specimens clamped between an electrically heated source at the top and a water cooled base, all contained within a Dewar vessel and furnished with a radiation shield and anti-convection baffle.

The specimens are fitted with very small thermocouples at known distances apart and connected via a selector switch to a digital temperature readout. The heating current is supplied from a variable voltage power pack and displayed on a digital ammeter.

The water cooled base is designed as a calorimeter to measure the heat flow and fitted with very accurate thermometers in the water circuit. Cooling water is supplied from the constant head water tank mounted above the Dewar vessel.

A selection of cylindrical specimens of different materials is provided. The specimens vary in diameter and are up to 65 mm in length according to conductivity. They are accurately finished and those subject to corrosion are silver plated. The complete apparatus is housed in a high quality instrument case containing all electrical controls and carrying the specimen stack.

TENDER SPECIFICATION

To comprise electrically heated self clamping specimen stack, calorimeter base, Dewar vessel and cooling water supply mounted on instrument case. Front panel to carry a thermocouple selector switch, variable voltage power supply and digital ammeter and temperature meters. Two high accuracy thermometers, four NiCr/NiAl thermocouples and six various metal specimens comprising of mild steel, copper (2), aluminium (2) and stainless steel to complete the unit.

SERVICES

Electrical supply:- 220/240V 50/60Hz single phase, 2 Amp max. (110V version to special order)

Water supply:- Trickle of cold water to maintain header tank

SHIPPING DETAILS

55 Kg gross. 70 x 55 x 92 cm case size