

EMISSIVITY MEASUREMENT APPARATUS (EE-1570)

The present Set-up is designed to measure the emissivity of test plate. The test plate comprises of a mica heater sandwiched between two circular plates. Black plate is identical with test plate, but its surface is blackened. As all the physical properties, dimension and temperature are equal; heat losses from both plates will be same except radiation loss. Hence the input difference will be due to difference in emissivity. Both plates are supported on individual brackets in a wooden enclosure with one side glass to ensure steady atmospheric conditions. Temperature Sensors are provided to measure the temperature of each plate and surrounding. Supply is given to heaters through separate variacs so that temperatures of both can be kept equal and is measured with Digital Voltmeter and Digital Ammeter.

EXPERIMENTS:

-) Determining the Emissivity of a test plate.
-) Study the variation of emissivity of test plate with respect to absolute Temperature.

UTILITIES REQUIRED:

-) Electricity Supply: 1Phase, 220 VAC, 4 Amp.
-) Table for set-up support

TECHNICAL DETAILS:

-) Test plate Dia : 160mm
-) Black Plate Dia. : 160mm
-) Heater (2Nos.) : Nichrome Wire Heater. (One each for test plate and black plate)
-) Temperature Sensors : RTD PT-100 type (3 Nos.)
-) Control panel : Digital Voltmeter: 0-300Volt, Digital Ammeter: 0-2Amps, DPDT Selector switches: For Digital Voltmeter & Digital Ammeter
-) Variacs : 0-230 V, 2 A, (2 Nos.) (One each for test plate and black plate),
-) Digital Temperature Indicator: 0-300^oC, with multichannel Switch,
-) On/Off switch, Mains Indicator etc
-) Cabinet to accommodate the slab assembly with front window of Glass/acrylic
-) The whole set-up is mounted on a powder coated base plate.

