



SWEATING GUARDED HOTPLATE



The Sweating Guarded Hotplate simulates the heat and mass transfer processes which occur next to human skin. Measurement of thermal resistance and water vapor resistance under steady state conditions of a range of products including fabrics, films, coatings, foams and leather including multi-layer assemblies.

Principles

The specimen to be tested is placed on an electronically heated porous plate with conditioned air ducted to flow across and parallel to its upper surface.

Installation

The instrument includes the test enclosure into which is constructed the measuring unit and thermal guard, and in which the ambient air temperature, air speed and relative humidity are controlled. However the entire system must be operated in conditions conforming to ISO 139:2005 Textiles-Standard Atmospheres for Conditioning and Testing.

Utilities required

20 amp single phase electrical supply
Supply of triple distilled water (not plumbed)

Physical specifications

Dimensions

1260 mm x 950 mm x 1800 mm

Weight

500kg

Standards

ISO 11092 ASTM F1868 GB 11048

Technical specifications

Thermal resistance (R_{ct}) test range

0.002 – 2.0 m K/W

Vapor resistance (R_{et}) test range: 5 – 1000mPa/W

Maximum test specimen sizes

300 x 300mm for specimen thickness < 5mm

214mm x 214mm for test specimen thickness from 5–70mm

Hotplate

3mm porous bronze plate 200mm x 200mm

Hotplate temperature control at 35C 0.1C

Thermal guard temperature control at 35C 0.1C

Enclosure

Conditioned air flows parallel to Hotplate and ThermalGuard

Air duct height

55mm mm above the working platform

Air temperature range

18C–40C 0.1C

Relative humidity

30–70% 3%

Air temperature accuracy during test

0.5 C for thermal resistance and vapor resistance < 0.5 mK/W and 100 mPa/W

Air flow speed

10.05 m/s, measured 15mm above the working platform at 20C air temperature

Supplied with laptop computer, USB connection cable and M259 software disc