

Thermal Conductivity

Scope:

The TCP advanced / TC-30, is a non-destructive testing instrument, measures the thermal properties of the material.

Primary thermal measurements are Thermal conductivity and Effusivity ($\sqrt{k\rho C_p}$).

Other factors involved include Density, Heat capacity, sample thickness, and Temperature.

Thermal Conductivity is a parameter characterizing the ability of a material to conduct heat while Thermal Effusivity is defined as the square root of the product of Thermal Conductivity (k), Density (ρ) and heat capacity (C_p) of the material.

Test procedure:

- Thermal Conductivity: a parameter characterizing the ability of a material to conduct heat. A one-dimensional, planar property.
- Thermal Diffusivity: measures the ability of a material to conduct thermal energy relative to its ability to store energy. It is often expressed as the rate of change of temperature in a transient heat transfer process.
- Thermal Effusivity is defined as the square root of the product of thermal conductivity.

Sample:

A minimum flat surface area of 50mm x 5mm with a nominal thickness for a glassy material of 5mm with highly isolative foams it can be down to a 1 mm.

