

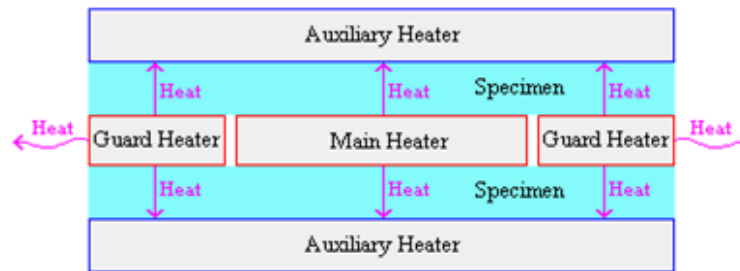
# HI-TEMP COATINGS TECHNOLOGY

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## Thermal Conductivity ASTM C-177

The rate of heat flow through a material, per unit thickness, per degree of temperature difference across the thickness of the specimen is performed using ASTM C-177.

Testing is performed using a guarded-hot-plate apparatus. Two identical samples are placed on opposite sides of the main heater. The main heater and guard heaters are kept at the same temperature. Both auxiliary heaters are maintained a lower temperature. The guard heaters minimize the amount of lateral heat transfer from the main heater. Temperatures are monitored at each surface of thermocouples. The heat transferred through the specimens is equal to the power supplied to the main heater. Thermal equilibrium is established when temperature and voltage readings are steady.



### Guarded-Hot-Plate Apparatus

Thermal Conductivity is calculated using:

$$K = P / [t * (T_m - T_a)]$$

Where P is the power supplied to the main heater, t is the total specimen thickness (twice the single specimen thickness), and  $T_m$  is the temperature of the main heater, and  $T_a$  is the temperature of the auxiliary heater.

### Testing conducted by GEOSCIENCE LTD, San Diego

Material Investigated: Hi-Temp Coating 707,  
6" x 6" x 0.14" Sample

Measurement Method:  
Guarded Hot Plate (following the procedures of ASTM C-177 Modified\*)

#### Results:

Temperature Level	Thermal Conductivity
°F	Btu/hr ft°F
100	0.06
300	0.06

\* The metering power is measured to less than ±2% of true values