

Thermal Conductivity

Reference Material

Stainless Steel

$K_{ref} = 14.80 \text{ W/m}^2\text{K}$

Thickness $t_1 = 12.60\text{mm}$

Test Material

Toray fiber & Matrix

$K_c = ?$

Thickness $t_2 = 0.09\text{mm}$

Initial Weight % (29wt%)

Fiber weight = 0.0163g

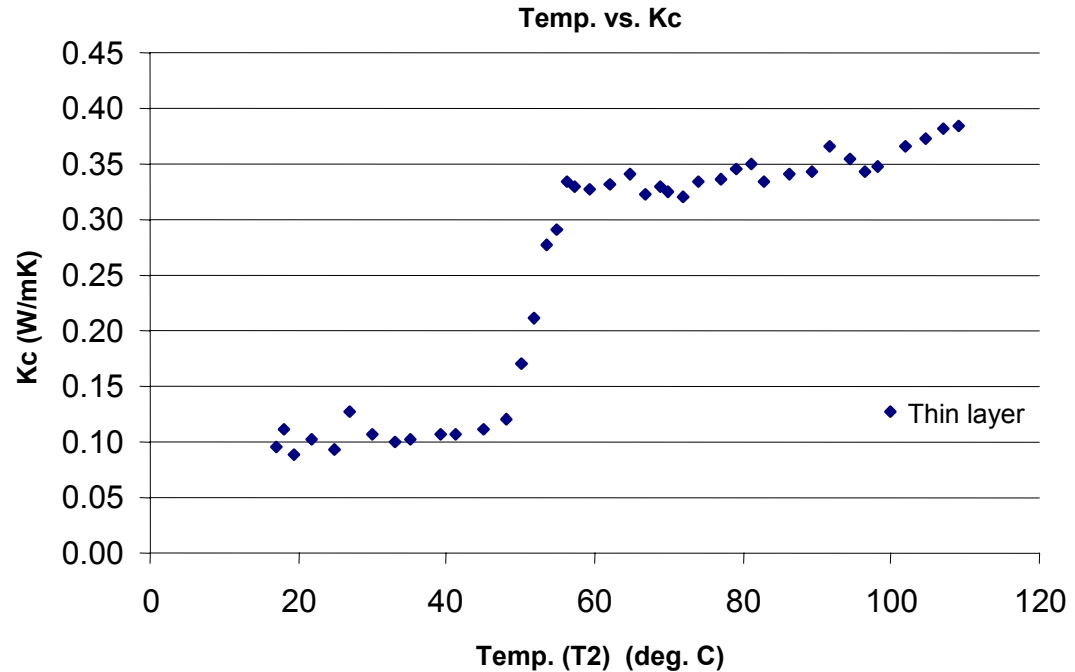
Total weight = 0.0566g

Equation

$$K_c = K_{ref} \frac{t_2}{t_1} \frac{T_1 - T_2}{T_2 - T_3}$$

Comment

- Calculated *without thickness changes*
with initial thickness (0.09mm) → final thickness(0.03mm)
- melting point of Astrowax 3040 is around 54 deg. C.



Thermal Resistance

Equation

$$R_C = \frac{1}{K_C} \frac{t_1}{Area}$$

t1 : Use previous assumption
(various thickness from 0.09 to
0.03mm)

Area : 1inch x 1inch

Kc : Modified Thermal conductivity

