Answer on Question #46614, Physics, Other

Question:

a square plate of side 10cm is made of a matal of linear expansivity 2*10-5k.as the plate is heated from 30degree celcius to 100 degree celcius, the area of one face of the plate will increase to?

Answer:

The change in the area can be estimated as:

$$\frac{\Delta A}{A} = \alpha_A \Delta T$$

The area thermal expansion coefficient is two times the linear coefficient

$$\alpha_A = 2\alpha_L$$

Therefore:

$$\Delta A = 2A\alpha_L \Delta T$$

Total area equals:

$$A' = A + \Delta A = a^2(1 + 2\alpha_L \Delta T) = 100.24 \ cm^2$$

Answer: $100.24 \ cm^2$