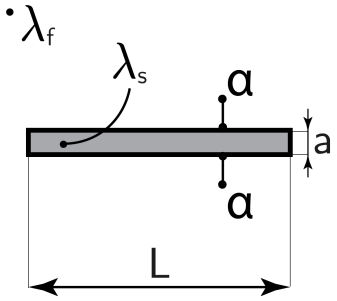
# Biot Number 07

**Give an expression for the Biot number of a thin horizontal plate in terms of given variables. Note that the plate is subjected to convection on 2 sides.**




The standard expression for the Biot number is:

$$\mathrm{Bi} = \frac{\alpha L_\mathrm{c}}{\lambda_\mathrm{s}}$$

The characteristic length in the given situation should be determined.

In this case, the characteristic length is:

$$L_\mathrm{c} = \frac{V}{A_\mathrm{s}} = \frac{LWa}{2LW} = \frac{a}{2}$$

$W$ denotes the width of the plate.

With this finding, the Biot number in the given situation can be expressed as:

$$\mathrm{Bi} = \frac{\alpha a}{2\lambda_\mathrm{s}}$$