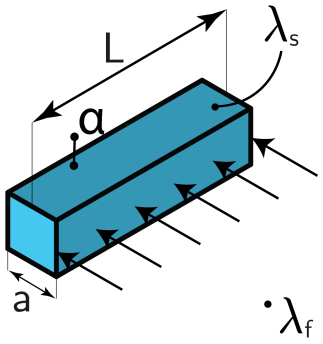
Nusselt Number 02

Give an expression for the Nusselt number in terms of given variables.



The standard expression for the Nusselt number is:

$$\mathrm{Nu} = \frac{\alpha L_c}{\lambda_{\mathrm{fluid}}}$$

The characteristic length has to be determined. For transverse flow along a cylinder, this is the height of the cylinder from top to bottom.

Which in the given situation is:

$$L_c = a$$

And therefore the Nusselt number can be expressed as:

$$\mathrm{Nu} = \frac{\alpha a}{\lambda_f}$$