

Control Volume - Cond. - Body 10

A steel cube, initially at a homogeneous temperature T_0 , is subjected to convection at all sides of a steel cube except the bottom. The bottom side is adiabatic, while the top side is subject to heat flow in addition to convection. Pick the suitable control volume for deriving the governing energy equation that describes the time variation of the homogeneous temperature of the cube.



Defining the domain:

The temperature of the body remains homogenous at all times. Therefore a global energy balance around the entire body is suitable for deriving the energy equation that describes the temporal change of temperature over time.