Two-dimensional heat transfer with convection

REFERENCE	The Standard NAFEMS Benchmarks, Rev. 3, NAFEMS, Glasgow, 1990
MODEL FILENAME	2D HT with convection.nfx

Figure 1 shows a two-dimensional heat transfer problem. The temperature of 100°C is prescribed to the edge AB. On the edges BC and CD, convection boundary conditions are applied with an ambient temperature at 0°C. The edge DA is insulated. Steady-state heat transfer analysis is carried out, and the temperature at the point E is determined.

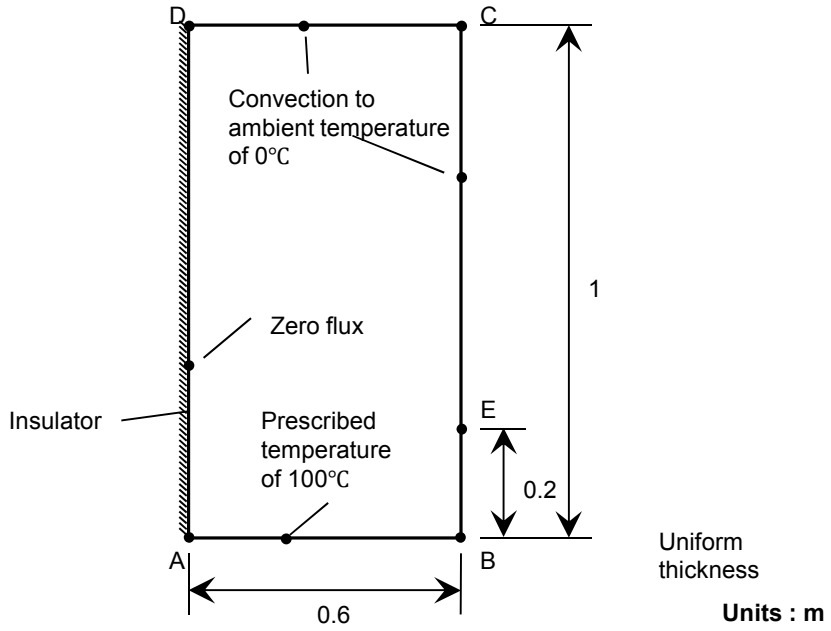

Figure 1. Rectangular plate model

Material data	Conductivity	$k = 52\ J/m \cdot hr \cdot {}^{o}C$
	Convection coefficient	$h = 750.0\ W/m^2\ {}^{o}C$

Table 1. Temperature T at node E obtained using solid elements

Reference		T_E [°C]
		18.3
Element type	Number of elements	
HEXA-20	3x5x1	**17.9**