Modeling a Phase Change

You can model a material which changes phase simply by defining a Phase Change Temperature and Latent Heat for it (see *Variable Materials*). You must also define its Specific Heat in the higher temperature phase.

TMG handles phase change as follows. When the element is above or below its phase change temperature, its temperature is calculated using:

$$\sum_i Q_{ji} = C_i \frac{dT_i}{dt}$$

When the element reaches the phase change temperature, TMG uses:

$$\sum_i Q_{ji} = h_s \frac{d\lambda_i}{dt}$$

where

h_s is the latent heat

λ_i is the element's quality, $0 < \lambda_i < 1$

The quality parameter records the fraction of the element which has changed phase. It is recommended to use variable thermal conductivity when modelling phase change materials.
