UMATHT

> **Warning:** The use of this subroutine generally requires considerable expertise. You are cautioned that the implementation of any realistic thermal model requires significant development and testing. Initial testing on models with few elements under a variety of boundary conditions is strongly recommended.
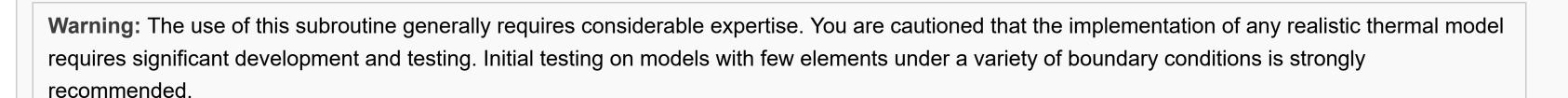
User subroutine `UMATHT`:

- can be used to define the thermal constitutive behavior of the material as well as internal heat generation during heat transfer processes;
- will be called at all material calculation points of elements for which the material definition includes a user-defined thermal material behavior;
- can be used with the procedures discussed in About Heat Transfer Analysis Procedures;
- can use solution-dependent state variables;
- must define the internal energy per unit mass and its variation with respect to temperature and to spatial gradients of temperature;
- must define the heat flux vector and its variation with respect to temperature and to gradients of temperature;
- must update the solution-dependent state variables to their values at the end of the increment;
- can be used in conjunction with user subroutine `USDFLD` to redefine any field variables before they are passed in; and
- is described further in User-Defined Thermal Material Behavior.

This page discusses:

- Use of Subroutine `UMATHT` with Coupled Temperature-Displacement and Coupled Thermal-Electrical-Structural Elements
- User Subroutine Interface
- Variables to Be Defined
- Variables That Can Be Updated
- Variables Passed in for Information

See Also

In Other Guides

User-Defined Thermal Material Behavior

*USER MATERIAL

Freezing of a square solid: the two-dimensional Stefan problem

UMATHT

Is this page useful?