MATERIAL ELASTIC ORTHOTROPIC

Synopsis:
The MATERIAL ELASTIC ORTHOTROPIC command is used to specify the parameters associated with an orthotropic linear elastic material idealization. The same parameters can be specified via the MATERIAL ELASTIC ANISOTROPIC command, however the MATERIAL ELASTIC ORTHOTROPIC command simplifies the description of an orthotropic elastic material.

Syntax:
```
MATerial ELAstic ORThotropic NUMber ##
   ( DEScription “string”) 
   ( 1_Modulus #.# ) ( 2_Modulus #.#) ( 3_Modulus #.# )
   ( 12_Ratio #.# ) ( 13_Ratio #.# ) ( 23_Ratio #.# )
   ( 12_Shear #.# ) ( 13_Shear #.# ) ( 23_Shear #.# )
```

Explanatory Remarks:
For the special case of an anisotropic material possessing three planes of elastic symmetry, the material constants can be specified using the MATERIAL ELASTIC ORTHOTROPIC command in lieu of the MATERIAL ELASTIC ANISOTROPIC command. The NUMBER keyword is used to specify the (global) number of the material associated with the anisotropic elastic idealization. The default values for 1_MODULUS, for 2_MODULUS, 3_MODULUS, 12_SHEAR, 13_SHEAR, and for 23_SHEAR are 1.0. The default values for 12_RATIO, 13_RATIO, and for 23_RATIO are zero (0.0) If the principal directions of the anisotropic material differ from the global ones, suitable transformations must be performed using the TRANSFORM command.
Example:

In simulating the behavior of engineered wood, the following orthotropic elastic material idealization was used [1]

mat elastic orthotropic num 1 desc "laminated wood material" &
  1_mod  1.40e+07  2_mod 6.087e+05  3_mod  6.176e+05 &
  12_ratio  0.460  13_ratio  0.340  23_ratio  0.424 &
  12_shear  8.60e+05

See also:

The DIMENSION, MATERIAL ELASTIC ISOTROPIC, the MATERIAL ELASTIC ANISOTROPIC, and the TRANSFORM commands.
References