

## NOMENCLATURE

$x, y, z$	Rectangular coordinates
$r, \theta, \phi$	Polar coordinates
$r, \theta, z$	Cylindrical coordinates
$\alpha, \beta, \gamma$	Orthogonal curvilinear coordinates
$\xi, \eta$	Elliptical coordinates
$X, Y, Z$	Components of a body force per unit volume
$\bar{X}, \bar{Y}, \bar{Z}$	Components of a distributed surface force per unit area.
$(\sigma_x)_T, (\sigma_y)_T, (\sigma_z)_T$	Normal components of stress parallel to x, y and z axes in the presence of temperature.
$(\hat{x}x)_T, (\hat{y}y)_T, (\hat{z}z)_T$	Normal components of stress parallel to x, y and z axes in the presence of temperature.
$(\hat{r}r)_T, (\hat{\theta}\theta)_T, (\hat{\phi}\phi)_T$	Normal components of stress in polar coordinates in the presence of temperature.
$(\hat{r}r)_T, (\hat{\theta}\theta)_T, (\hat{z}z)_T$	Normal components of stress in cylindrical coordinates in the presence of temperature.
$(\hat{\alpha}\alpha)_T, (\hat{\beta}\beta)_T$	Normal components of stress in curvilinear coordinates in the presence of temperature.

$$(\widehat{\xi\xi})_T, (\widehat{\eta\eta})_T$$

Normal components of stress in elliptical coordinates in the presence of temperature.

$$(\sigma_x)_c, (\sigma_y)_c, (\sigma_z)_c$$

Normal stress components in cartesian coordinates in the absence of temperature.

$$(\widehat{x\hat{x}})_c, (\widehat{y\hat{y}})_c, (\widehat{z\hat{z}})_c$$

Normal stress components in cartesian coordinates in the absence of temperature.

$$(\widehat{r\hat{r}})_c, (\widehat{\theta\hat{\theta}})_c, (\widehat{\phi\hat{\phi}})_c$$

Normal components in polar coordinates in the absence of temperature.

$$(\widehat{r\hat{r}})_c, (\widehat{\theta\hat{\theta}})_c, (\widehat{z\hat{z}})_c$$

Normal components of stress in cylindrical coordinates in the absence of temperature.

$$(\widehat{\alpha\alpha})_c, (\widehat{\beta\beta})_c$$

Normal components of stress in curvilinear coordinates in the absence of temperature.

$$(\widehat{\xi\xi})_c, (\widehat{\eta\eta})_c$$

Normal components of stress in elliptical coordinates in the absence of temperature.

$$(\sigma_{xx})_T, (\sigma_{xz})_T, (\sigma_{zy})_T$$

Shearing stress components in rectangular coordinates in the presence of temperature.

$$(\widehat{x\hat{y}})_T, (\widehat{y\hat{z}})_T, (\widehat{z\hat{x}})_T$$

Shearing stress components in rectangular coordinates in the presence of temperature.

$$(\widehat{r\hat{\theta}})_T, (\widehat{\theta\hat{\phi}})_T, (\widehat{r\hat{\phi}})_T$$

Shearing stress components in polar coordinates in the presence of temperature.

$$(\widehat{r\hat{\theta}})_T, (\widehat{\theta\hat{z}})_T, (\widehat{z\hat{r}})_T$$

Shearing stress components in cylindrical coordinates in the presence of temperature.

$$\sigma_{\rho\rho}, \sigma_{\theta\theta}, \sigma_{zz}, \sigma_{\rho z}$$

Stress tensor in cylindrical system.

$$(\hat{\alpha}\hat{\beta})_T, (\hat{\beta}\hat{\gamma})_T, (\hat{\gamma}\hat{\alpha})_T$$

Shearing stress components in curvilinear coordinates in the presence of temperature.

$$(\hat{\xi}\hat{\eta})_T, (\hat{\eta}\hat{z})_T, (\hat{\xi}\hat{z})_T$$

Shearing stress components in elliptical coordinates in the presence of temperature.

$$(\sigma_{xy})_c, (\sigma_{yz})_c, (\sigma_{zy})_c$$

Shearing stress components in cartesian coordinates in the absence of temperature.

$$(\hat{r}\hat{\theta})_c, (\hat{\theta}\hat{\phi})_c, (\hat{r}\hat{\phi})_c$$

Shearing components of stress in polar coordinates in the absence of temperature.

$$(\hat{r}\hat{\theta})_c, (\hat{\theta}\hat{z})_c, (\hat{z}\hat{r})_c$$

Shearing components of stress in cylindrical coordinates in the absence of temperature.

$$(\hat{\alpha}\hat{\beta})_c, (\hat{\beta}\hat{\gamma})_c, (\hat{\gamma}\hat{\alpha})_c$$

Shearing components of stress in curvilinear coordinates in the absence of temperature.

$$(\hat{\xi}\hat{\eta})_c$$

Shearing components of stress in elliptical coordinates in the absence of temperature.

$$u_\alpha, v_\beta, w_\gamma$$

Components of displacements in curvilinear coordinates.

$$u_r, v_\theta, w_\phi$$

Components of displacements in polar coordinates.

$$u_r, v_\theta, w_z$$

Components of displacements in cylindrical coordinates.

$$(\epsilon_x)_T, (\epsilon_y)_T, (\epsilon_z)_T$$

Components of strain in the presence of temperature in the x, y, z directions respectively.

$$(\epsilon_x)_c, (\epsilon_y)_c, (\epsilon_z)_c$$

Components of strain in the absence of temperature in the x, y, z directions respectively.

$\epsilon_r, \epsilon_\theta, \epsilon_\phi$	Components of strain in polar coordinates.
$\epsilon_r, \epsilon_\theta, \epsilon_z$	Components of strain in cylindrical coordinates.
E	Young's modulus.
G, $\mu$	Modulus of elasticity/Modulus of rigidity.
$\sigma, \gamma, \eta$	Poisson's ratio.
$\mu = G, \lambda = \frac{\nu E}{(1 + \nu)(1 - 2\nu)}$	Lame's constants.
$\phi$	Stress function /Displacement potential function.
t	Time.
$T_0$	Absolute temperature.
T	Temperature.
$\alpha / \alpha_1$	Coefficients of linear thermal expansion.
$E_1, E_2$	Young's moduli in the x and y directions respectively.
$K_2$	Stress intensity factor at the boundary of the externally cracked region.
$K_a$	Stress intensity factors at the boundaries $r = a$ .
$K_b$	Stress intensity factors at the boundaries $r = b$ .
$\nu_1$	Ratio of the contraction parallel to x axis to the extension parallel to y axis.

$u_T, v_T, w_T$	Components of displacements in the presence of temperature.
$u_c, v_c, w_c$	Components of displacements in the absence of temperature.
$\nu_2$	Ratio of the contraction parallel to y axis to the extension parallel to x axis.
$\alpha_1$	Coefficient of linear thermal expansion in the x axis.
$\alpha_2$	Coefficient of linear thermal expansion in the y axis.
$\alpha_3$	Coefficient of linear thermal expansion in the z axis.
$\varphi$	Love function.
$\delta(t)$	Dirac - delta function.
$H(t)$	Heavyside unit function.
$F$	Hypergeometric function.
$J_0$	Bessel function of first kind and zero order.
$I_1$	Bessel function of second kind and first order.
$\theta(r, z)$	Temperature function.
$Y(\lambda r)$	Weber's Bessel function.