FORMULÁRIO
(Propriedades Mecânicas)

$\sigma = \frac{F}{A}$ $\varepsilon = \frac{\delta}{L}$ $\sigma = \varepsilon E$ $\tau = \frac{F}{A}$ $\delta_P = \frac{PL}{AE}$

$\delta_T = \alpha(\Delta T)L$ $\tau = G\gamma$ $G = \frac{E}{2(1+\upsilon)}$ $\gamma = \frac{\rho\phi}{L}$ $\tau = \frac{T\times\rho}{J}$ $\tau_m = \frac{T\times c}{J}$

$\phi = \frac{TL}{JG}$ $\varepsilon_1 = \frac{1}{E}(\sigma_1 - \upsilon\sigma_2 - \upsilon\sigma_3)$ $\varepsilon_2 = \frac{1}{E}(\sigma_2 - \upsilon\sigma_1 - \upsilon\sigma_3)$ $\varepsilon_3 = \frac{1}{E}(\sigma_3 - \upsilon\sigma_1 - \upsilon\sigma_2)$

$\sigma = \frac{M\times y}{I}$ $\sigma_m = \frac{M\times c}{I}$ $\sigma_m = \frac{M}{W}$ $W = \frac{I}{c}$ $I = \frac{1}{12}bh^3$ (secção retangular)

$W = \frac{1}{6}bh^2$ (secção retangular) $I = \frac{\pi}{4}c^4$ (veio circular maciço) $I = \frac{\pi}{4}(c_2{}^4 - c_1{}^4)$ (veio circular oco)

$J = \frac{\pi}{2}c^4$ (veio circular maciço) $J = \frac{\pi}{2}(c_2{}^4 - c_1{}^4)$ (veio circular oco) $\tau_m = \frac{3}{2}\frac{V}{A}$ ou $\tau_m = \frac{V}{A_w}$

$\sigma_{\max/\min} = \left(\frac{\sigma_x + \sigma_y}{2}\right) \pm \sqrt{\left[\frac{\sigma_x - \sigma_y}{2}\right]^2 + \tau_{xy}{}^2}$ $\tau_{\max} = \sqrt{\left[\frac{\sigma_x - \sigma_y}{2}\right]^2 + \tau_{xy}{}^2}$ $\sigma_{med} = \left(\frac{\sigma_x + \sigma_y}{2}\right)$

$\tan 2\theta_p = \frac{2\tau_{xy}}{(\sigma_x - \sigma_y)}$ $\tan 2\,\theta_s = -\frac{\sigma_x - \sigma_y}{2\tau_{xy}}$ $\tau_{máx} < \frac{\sigma_{ced}}{2}$ $(\sigma_1^2 - \sigma_1\sigma_3 + \sigma_3^2)^{\frac{1}{2}} < \sigma_{ced}$

$\bar{Y} = \frac{\sum \bar{y}A}{\sum A}$ $I_{x'} = \sum\left(\bar{I} + A\,d^2\right)$