

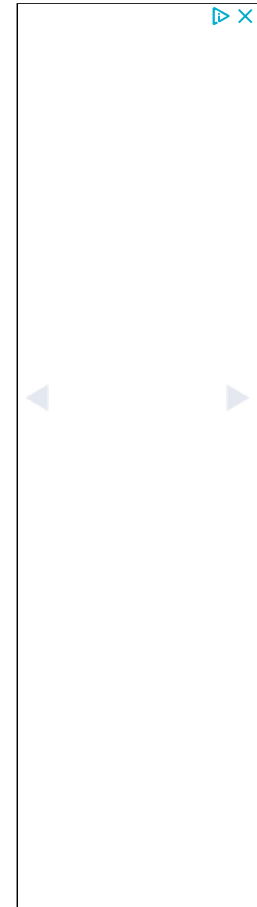
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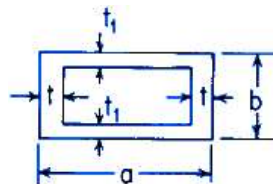


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Stress Hollow Rectangle Thin Wall Tube Torsion Equations and Calculator

[Beam Deflection and Stress Equation and Calculators](#)

Torsional Deformation and Stress Hollow Rectangle Thin Wall Tube Section Equations and Calculator.



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Preview

[Torsional Deformation and Stress Hollow Rectangle Thin Wall Tube Section Calculator](#)

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$$K = \frac{2tt_1(a-t)^2(b-t_1)^2}{at + bt_1 - t^2 - t_1^2}$$

Angle of Twist under applied Torque Moment

$$\theta = (TL) / (KG)$$

Shear Stress

Near the mid length of the short sides

$$\tau_{\text{average}} = \frac{T}{2t(a-t)(b-t_1)}$$

Near the mid length of the Long sides

$$\tau_{\text{average}} = \frac{T}{2t_1(a-t)(b-t_1)}$$

Where:

θ = angle of twist (radians)

α = degrees

T = Twisting or torque moment force-length, (in-lbs, N-mm)

L = Length (in, mm)

a, b = Diameter (in, mm)

t = Thickness wall (in, mm)

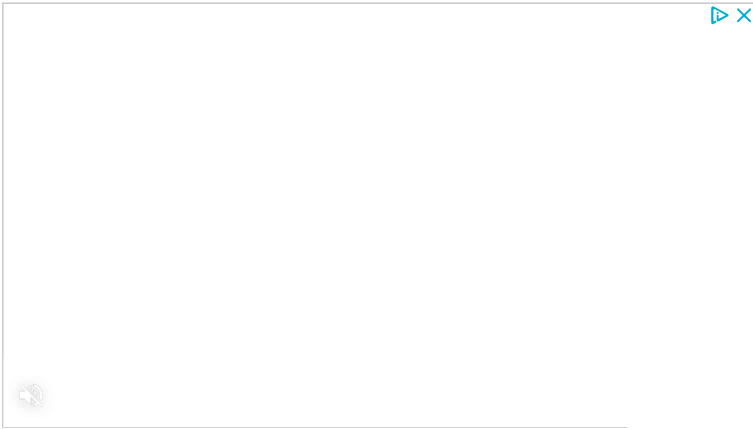
τ = Unit shear stress force / area (lbs/in², N/mm²)

G = [Modulus of rigidity](#), force / area (lbs/in², N/mm²)

K = Polar Moment of Inertia (in⁴, mm⁴) for section

References:

Roark's Formulas for Stress and Strain



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