Solid Mechanics Formula Sheet

Stress

Stress (sigma) = Force (F) / Area (A)

Where, sigma = Stress, F = Force applied, A = Cross-sectional area perpendicular to the force.

Strain

Strain (epsilon) = Change in Length (Delta L) / Original Length (L)

Where, epsilon = Strain, Delta L = Change in length, L = Original length.

Shear Stress

Shear Stress (tau) = Shear Force (V) / Area (A)

Where, tau = Shear stress, V = Shear force, A = Area parallel to the force.

Torsion

Torsion (tau) = Torque (T) / Polar Moment of Inertia (J)

Where, tau = Torsional shear stress, T = Applied torque, J = Polar moment of inertia.