

Stress & Strain

Physics

The stress-strain curve, and the points marked on it.

Points on a typical metal's stress-strain curve.

Point	Means
Limit of proportionality	Beyond it, stress and strain are no longer proportional
Elastic limit	Beyond it, deformation is permanent
Yield point	Strain increases with little extra stress
Ultimate tensile stress	The maximum stress it can bear
Fracture	It breaks

Stress = F/A , strain = extension/original length, E = stress/strain. Strain has no units; stress is in pascals.