

The Tensile Test Curve

Mechanical Engineering

Every strength a datasheet quotes, and where it sits on the curve.

A tensile test plots engineering stress against engineering strain and names every strength a code quotes.

MILD STEEL YIELD
about 250 MPa

MILD STEEL TENSILE
about 430 MPa

ELONGATION AT BREAK
about 20%

- The straight portion is elastic; its slope is E
- Yield is where permanent deformation begins
- 0.2% proof stress is used when yield is vague
- The peak of the curve is the tensile strength
- Necking follows the peak, then fracture
- Area under the whole curve is toughness

LOOK FOR IT

A ductile metal warns you by deforming first. A brittle one does not.

Values vary with grade, direction and heat treatment. Educational reference; design to certified data.