

Material Properties Chart

Common engineering materials and their typical mechanical and thermal properties.

Material Properties

Material	Yield Strength (MPa)	Tensile Strength (MPa)	Density (kg/m ³)	Therm. Cond. (W/m-K)	Elastic Mod. (GPa)	Poisson's Ratio
Steel (Structural)	250 - 400	400 - 550	7850	45 - 50	200 - 210	0.30
Steel (Alloy)	400 - 1000+	700 - 1200+	7850	30 - 45	205 - 210	0.30
Stainless Steel (304)	205 - 215	505 - 515	8000	16.2	193 - 200	0.29
Aluminum (6061-T6)	276	310	2700	167	68.9	0.33
Aluminum (7075-T6)	503	572	2810	130	71.7	0.33
Titanium (Ti-6Al-4V)	880 - 920	950 - 1000	4430	6.7	113.8	0.34
Brass (C360)	310	400	8500	115	97	0.34
Nylon (6/6)	60 - 85	75 - 85	1150	0.25	2 - 4	0.39
ABS Plastic	40 - 50	40 - 50	1050	0.17	2 - 2.5	0.35

Important Notes:

- Values are typical ranges and can vary significantly based on specific alloy, temper, and processing.
- Yield Strength: The stress at which a material begins to deform plastically.
- Tensile Strength: The maximum stress a material can withstand while being stretched or pulled.
- Elastic Modulus (Young's Modulus): A measure of the stiffness of a solid material.
- Poisson's Ratio: The ratio of transverse strain to axial strain.