

Physical Properties of Steel

ITEM	ENGLISH UNITS	METRIC UNITS
Specific Gravity	7.9	7.9
Density	490 lb/ft ³	7850 kg/m ³
Melting Point	2370°F–2640°F	1300°C–1450°C
Specific Heat	0.12 $\frac{\text{Btu}}{(\text{lb}) (\text{°F})}$	0.12 $\frac{(\text{Cal})}{(\text{gr}) (\text{°C})}$
Linear Coefficient of Thermal Expansion	$6.5 \times 10^{-6} \frac{1}{\text{F}}$	$(11.7) \times 10^{-6} \frac{1}{\text{C}}$
Volumetric Coefficient of Thermal Expansion	$19.5 \times 10^{-6} \frac{1}{\text{F}}$	$(35.1) \times 10^{-6} \frac{1}{\text{C}}$
Thermal Conductivity at 60°F	$\frac{34 (\text{Btu})}{(\text{hr})(\text{ft})(\text{°F})}$	58.9W/(m)(K)
Electrical Resistivity at 60°F		17×10^{-8} (ohm-meters)
Speed of Sound through Steel	18,000 ft/sec	5490 m/sec
Young's Modulus of Elasticity	29,000,000 lb/(in) ²	207,000 MPa
Poisson's Ratio, 0.3 in the elastic range and 0.5 in the plastic range		
Bulk Modulus	23,000,000 lb/(in) ²	159,000 MPa
Shear Modulus	12,000,000 lb/(in) ²	83,000 MPa
Emissivity of Polished Metal Surface	.07 @ 100°F .10 @ 500°F .14 @ 1000°F	.07 @ 38°C .10 @ 260°C .14 @ 540°C
Emissivity of Oxidized Steel Plate at 60°F	0.80	0.80

The properties listed above vary with the chemistry of the steel plate.

The values shown are typical for non-alloy plate grades.

If more accuracy is required, refer to a physics handbook.