

ASTM A36 Mild/Low Carbon Steel

ASTM A36 is the most commonly used mild and hot-rolled steel. It has excellent welding properties and is suitable for grinding, punching, tapping, drilling and machining processes. Yield strength of ASTM A36 is less than that of cold roll C1018, thus enabling ASTM A36 to bend more readily than C1018. Normally, larger diameters in ASTM A36 are not produced since C1018 hot roll rounds are used.

ASTM A36 is usually available in the following forms:

- Rectangle bar
- Square bar
- Circular rod
- Steel shapes such as channels, angles, H-beams and I-beams.

Chemical Composition

Element	Content
Carbon, C	0.25 - 0.290 %
Copper, Cu	0.20%
Iron, Fe	98.0%
Manganese, Mn	1.03%
Phosphorous, P	0.040%
Silicon, Si	0.280%
Sulfur, S	0.050%

Physical Properties

Physical Properties	Metric	Imperial
Density	7.85 g/cm ³	0.284 lb/in ³

Mechanical Properties

Mechanical Properties	Metric	Imperial
Tensile Strength, Ultimate	400 - 550 MPa	58000 - 79800 psi
Tensile Strength, Yield	250 MPa	36300 psi
Elongation at Break (in 200 mm)	20.0%	20.0%
Elongation at Break (in 50 mm)	23.0%	23.0%
Modulus of Elasticity	200 GPa	29000 ksi
Bulk Modulus (typical for steel)	140 GPa	20300 ksi
Poissons Ratio	0.260	0.260
Shear Modulus	79.3 GPa	11500 ksi

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Machining

The machinability rate of ASTM A36 is estimated to be 72%, and the average surface cutting feed of ASTM A36 is 120 ft/min. Machining of ASTM A36 steel is not as easy as that of AISI 1018 steel.

Welding

ASTM A36 steel is easy to weld using any type of welding methods, and the welds and joints so formed are of excellent quality.

Heat Treatment

Any standard carburizing and hardening methods of AISI 1018 steel is suitable for ASTM A36.

ASTM A36 is subjected to the following processes:

- Normalizing at 899°C – 954°C (1650°F-1750°F)
- Annealing at 843°C – 871°C(1550°F-1600°F)
- Stress relieving at 677°C – 927°C(1250°F-1700°F)
- Carburizing at 899°C – 927°C (1650°F-1700°F)
- Hardening at 788°C – 816°C(1450°F-1500°F)

CARBON STRUCTURAL STEEL PLATE

<i>all measurements in inches</i>	THICKNESS	WIDTH	LENGTH
A36	3/16" – 8"	48" – 120"	96" – 480"