

## Material Information



### Carbon Steel A36

#### Introduction

Carbon Steel A36 is a widely used low-carbon structural steel specified under ASTM A36/A36M. It is available in structural shapes, plates, and bars and offers a practical combination of strength, ductility, weldability, and machinability, making it suitable for CNC-machined components and general structural applications.

#### Advantages

Good strength, good ductility, excellent weldability, and relatively good machinability. Carbon Steel A36 can be readily welded, machined, formed, and fabricated using conventional manufacturing processes, making it a versatile material for general-purpose components and structural parts.

#### Disadvantages

Carbon Steel A36 has limited corrosion resistance compared with stainless steels and corrosion-resistant alloy steels, so that exposed parts may require protective coatings or other surface treatments. It also offers lower strength than many alloy and high-strength steels, making it less suitable for applications requiring very high strength or hardness.

#### Tolerance

3DSPRO can manufacture and inspect to tight tolerances, including sub +/- 0.001" tolerances, per your drawing specifications and GD&T callouts.

#### Recommendation

The combination of strength, ductility, weldability, and versatility makes Carbon Steel A36 suitable for CNC-machined components, fixtures, brackets, plates, bases, and general engineering parts. It is particularly appropriate for structural and industrial applications where moderate strength and straightforward fabrication are more important than high hardness or exceptional corrosion resistance.

| Material Specifications (For reference only.) |        |
|-----------------------------------------------|--------|
| Tensile strength                              | 250MPa |
| Shear modulus                                 | 79GPa  |
| Elongation at Break                           | 20%    |

|          |                        |
|----------|------------------------|
| Hardness | 119 HB                 |
| Density  | 7.85 g/cm <sup>3</sup> |

### Attention

ASTM A36 covers multiple product forms, including shapes, plates, and bars, and the applicable requirements can vary with product form and thickness. When A36 parts are welded, a welding procedure suitable for the grade and intended service should be used. Because A36 is an unalloyed carbon structural steel with limited inherent corrosion resistance, appropriate protective finishing should be considered for parts exposed to moisture or corrosive environments.

### Applications

3DSPRO finds people using Carbon Steel A36 to make functional parts and prototypes in the following industries and applications.

#### *Industrial equipment:*

Machine bases, brackets, mounting plates, structural supports, frames, and other general mechanical components.

#### *Construction and structural applications:*

Structural plates, brackets, base plates, supports, frames, and other fabricated components for general structural use.

#### *Machinery and manufacturing:*

Fixtures, tooling bases, mounting components, machine frames, guards, and other CNC-machined or fabricated parts.

#### *General engineering:*

Plates, bars, brackets, spacers, supports, and other components requiring a combination of strength, weldability, and economical fabrication.