

Material Information



Carbon Steel 1018

Introduction

Carbon Steel 1018, also known as AISI 1018, SAE 1018, or UNS G10180, is a low-carbon steel known for its good weldability, relatively good machinability, and ability to gain strength through cold working. It is widely available in sheet, strip, bar, and other forms and can be used for sheet metal fabrication when a balance of formability, strength, weldability, and cost is required.

Advantages

Good weldability, relatively good machinability, and useful cold-forming characteristics make Carbon Steel 1018 suitable for a wide range of fabricated metal parts. It can be bent, formed, punched, and cold-worked under appropriate conditions, while cold working can increase its strength and hardness. Compared with lower-carbon grades, 1018 also provides a useful balance between formability and mechanical performance for general-purpose fabrication.

Disadvantages

Carbon Steel 1018 has limited inherent corrosion resistance and can rust when exposed to moisture or corrosive environments without suitable protection. Its relatively low carbon content also limits the hardness and strength that can be achieved through conventional heat treatment compared with medium- and high-carbon steels. In addition, the material can become harder and less ductile as cold work increases, which may affect subsequent forming operations.

Tolerance

We offer tolerances as tight as $\pm 0.005"$. Tighter tolerances are available upon manual review.

Recommendation

The combination of good weldability, useful formability, relatively good machinability, and moderate mechanical performance makes Carbon Steel 1018 suitable for sheet metal fabricated parts used in automotive, industrial equipment, construction, electrical, machinery, and general manufacturing applications. It is particularly appropriate for brackets, panels, housings,

Covers, mounting components, and other fabricated parts where moderate strength and economical production are required.

Material Specifications (For reference only.)	
Tensile strength	370MPa
Shear modulus	78GPa
Elongation at Break	15%
Hardness	126 HB
Density	7.87 g/cm ³

Attention

Carbon Steel 1018 is a low-carbon steel, and its properties can vary with the material condition and degree of cold work. During bending, stamping, and other forming operations, the selected sheet condition and forming sequence should be considered because additional cold work can increase strength while reducing ductility. Carbon Steel 1018 also has limited corrosion resistance, so parts exposed to moisture or corrosive environments should be protected with an appropriate coating, paint, plating, or other surface treatment. Welding is generally straightforward, but thin sheet can still experience localized distortion from welding heat.

Applications

3DSPRO finds people using Carbon Steel 1018 to make functional parts and prototypes in the following industries and applications.

Automotive and transportation:

Brackets, mounting plates, supports, covers, formed components, and other fabricated parts requiring a balance of strength, formability, and weldability.

Industrial equipment and machinery:

Machine covers, guards, housings, brackets, mounting components, and other fabricated parts that require moderate strength and good fabrication characteristics.

Construction and structural fabrication:

Panels, brackets, supports, frames, plates, and other sheet metal components used in general construction and equipment structures.

Electrical and general manufacturing:

Electrical enclosures, cabinets, boxes, covers, panels, fixtures, and other fabricated sheet metal parts where good weldability, formability, and economical production are important.