

Material Information



Carbon Steel 1018

Introduction

Carbon Steel 1018, also known as AISI 1018 or UNS G10180, is a low-carbon steel containing approximately 0.15–0.20% carbon and 0.60–0.90% manganese. It offers a good balance of strength, ductility, weldability, and machinability, making it a widely used material for CNC-machined components and general engineering applications.

Advantages

Good machinability, excellent weldability, good ductility, and a balanced combination of strength and toughness. Carbon Steel 1018 can also be formed, drilled, machined, and cold-worked using conventional manufacturing processes, making it a versatile choice for CNC-machined parts.

Disadvantages

Carbon Steel 1018 has relatively low corrosion resistance compared with stainless steels and can require protective treatment when exposed to moisture or corrosive environments. Its low carbon content also limits its ability to achieve high through-hardness by conventional heat treatment, although its surface can be hardened through carburizing or other case-hardening processes.

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 machinability, weldability, ductility, and moderate strength makes Carbon Steel 1018 suitable for CNC-machined components used in automotive, industrial, machinery, and general engineering applications. It is particularly appropriate for shafts, pins, rods, spindles, fixtures, and other parts that do not require high alloy strength or high corrosion resistance.

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 available in different conditions, including hot-rolled and cold-drawn, and its mechanical properties can vary with processing history. For applications requiring higher surface hardness, carburizing or another case-hardening treatment may be considered. Parts exposed to moisture or corrosive environments may also require an appropriate protective finish to reduce corrosion.

Applications

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

Automotive parts and supplies:

Shafts, pins, spindles, rods, sprocket components, fasteners, and other general mechanical parts.

Industrial equipment:

Machine components, fixtures, mounting plates, spacers, couplings, and other CNC machined parts.

General engineering:

Bushings, pins, shafts, rods, studs, brackets, and other components requiring good machinability and weldability.

Machinery and hardware:

Gears, chain pins, tool holders, ratchets, machine parts, and other components that can benefit from case hardening when increased surface hardness is required.