

Material Information



Carbon Steel 1215

Introduction

Carbon Steel 1215, also known as AISI 1215 or UNS G12150, is a low-carbon resulfurized and rephosphorized free-machining steel. Its controlled additions of sulfur and phosphorus improve chip breaking and machining efficiency, making it particularly suitable for CNC turning and the production of precision components in high-volume manufacturing.

Advantages

Excellent machinability, good surface finish, and efficient chip control during CNC machining. Carbon Steel 1215 is well suited to high-speed turning and automatic machining operations and can provide consistent results for parts requiring repeated machining and close dimensional control.

Disadvantages

Carbon Steel 1215 has lower ductility and toughness than many general-purpose low-carbon steels and has poor weldability because of its relatively high sulfur and phosphorus content. It also offers limited corrosion resistance and is not intended for applications requiring high structural strength or severe fatigue performance.

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 excellent machinability, good surface finish, and efficient production performance makes Carbon Steel 1215 suitable for CNC machined components used in automotive, hydraulic, industrial, and general engineering applications. It is particularly appropriate for small and medium-sized precision parts produced in relatively high volumes.

Material Specifications (For reference only.)	
Tensile strength	415MPa
Shear modulus	80GPa
Elongation at Break	10%
Hardness	167 HB

Density	7.87 g/cm ³
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Attention

Carbon Steel 1215 is primarily intended for machining rather than welding, forming, or applications involving severe fatigue loading. Its high sulfur content improves chip breaking but significantly limits weldability. For parts exposed to moisture or corrosive environments, an appropriate protective coating or surface treatment should be considered.

Applications

3DSPRO finds people using Carbon Steel 1215 to make functional parts and prototypes in the following industries and applications.

Automotive parts and supplies:

Pins, spacers, fittings, shafts, bushings, fasteners, and other precision-machined components.

Hydraulic and fluid systems:

Hydraulic fittings, couplings, connectors, valve components, adapters, and other small precision parts.

Industrial equipment:

Bushings, studs, pins, sleeves, machine components, and other parts requiring efficient high-volume machining.

General hardware:

Screws, threaded components, inserts, standoffs, spacers, and other CNC turned parts requiring good machinability and a clean machined finish.