

Material Information



Aluminum 5052

Introduction

Aluminum 5052 is a 5000 series aluminum alloy with magnesium as its principal alloying element. It offers good corrosion resistance, workability, weldability, and moderate strength, making it suitable for CNC-machined components, functional prototypes, and parts used in demanding environments.

Advantages

Excellent corrosion resistance, good workability, good weldability, and a good strength-to-weight ratio. Aluminum 5052 is also well suited to applications requiring resistance to moisture and other corrosive environments, while maintaining relatively low weight.

Disadvantages

Aluminum 5052 has lower strength than higher-strength aluminum alloys such as 6061-T6 and 7075. Its relatively good ductility and workability also mean it is generally selected for applications where corrosion resistance and formability are more important than maximum strength.

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 corrosion resistance, workability, weldability, and moderate strength makes Aluminum 5052 suitable for CNC-machined parts used in automotive, marine, industrial, and general engineering applications. It is a practical choice for lightweight components that may be exposed to moisture or corrosive environments.

Material Specifications (For reference only.)	
Tensile strength	195MPa
Fatigue strength	115MPa
Elongation at Break	12%
Hardness	60 HB
Density	2.68 g/cm ³

Attention

Aluminum 5052 is available in multiple tempers, including O, H32, H34, and H38, and the mechanical properties can vary significantly between tempers. The required temper should therefore be specified when strength, hardness, or elongation is critical to the application. For parts requiring maximum mechanical strength, another aluminum alloy may be more appropriate.

Applications

3DSPRO finds people using Aluminum 5052 to make functional parts and prototypes in the following industries and applications.

Automotive parts and supplies:

Fuel system components, brackets, housings, panels, and other lightweight mechanical parts.

Marine and transportation:

Marine fittings, enclosures, fuel tanks, and components exposed to moisture and corrosive environments.

Industrial equipment:

Machine housings, covers, brackets, ducts, and other fabricated or CNC machined components.

Consumer supplies:

Enclosures, appliance components, lighting products, hardware, and other lightweight parts.