

Material Information



Aluminum 5052

Introduction

Aluminum 5052, also known as AA 5052 or UNS A95052, is a non-heat-treatable aluminum alloy containing magnesium as its principal alloying element. It is known for its good corrosion resistance, moderate strength, excellent formability, and good weldability. Aluminum 5052 is widely used for sheet metal fabrication because it can be readily cut, bent, formed, and welded while providing better strength than commercially pure aluminum alloys such as 1100.

Advantages

Good corrosion resistance, moderate strength, excellent formability, and good weldability make Aluminum 5052 well suited to sheet metal fabrication. It performs particularly well in applications exposed to moisture and marine environments. Its combination of strength and formability also makes it suitable for bending and forming operations while maintaining relatively low weight.

Disadvantages

Aluminum 5052 is not heat-treatable, so its strength cannot be substantially increased through conventional solution heat treatment and aging. It can also experience springback during bending, particularly in harder tempers, which may require appropriate tooling and bend allowances. Compared with higher-strength heat-treatable aluminum alloys, Aluminum 5052 may be less suitable for heavily loaded structural applications.

Tolerance

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

Recommendation

The combination of corrosion resistance, moderate strength, excellent formability, weldability, and lightweight construction makes Aluminum 5052 suitable for sheet metal fabricated parts used in automotive, marine, HVAC, electrical, industrial, and general engineering applications. It is particularly appropriate for enclosures, panels, brackets, tanks, and formed components.

that require a balance of durability, corrosion resistance, and ease of fabrication.

Material Specifications (For reference only.)	
Tensile strength	193MPa
Shear modulus	117GPa
Elongation at Break	15%
Hardness	60 HB
Density	2.68 g/cm ³

Attention

Aluminum 5052 is a non-heat-treatable alloy, and its mechanical properties depend on the material temper. During bending and forming, springback should be considered when establishing bend allowances and tooling parameters. Excessive forming can also cause work hardening and reduce further formability. For applications requiring high structural strength, the specific temper and required mechanical performance should be evaluated before fabrication.

Applications

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

Automotive and transportation:

Fuel tanks, brackets, panels, protective covers, chassis-related components, and other fabricated parts requiring good corrosion resistance and formability.

Marine applications:

Marine panels, enclosures, brackets, tanks, and other components exposed to moisture or marine environments.

HVAC and industrial equipment:

Ducting, housings, panels, equipment covers, brackets, and other sheet metal components requiring corrosion resistance and good forming characteristics.

Electrical and general fabrication:

Electrical enclosures, cabinets, panels, boxes, covers, and other fabricated components that require a combination of moderate strength, lightweight construction, and good corrosion resistance.