

Material Information



Aluminum 1100

Introduction

Aluminum 1100, also known as AA 1100 or UNS A91100, is a commercially pure aluminum alloy with excellent corrosion resistance, high thermal and electrical conductivity, and excellent formability. As a non-heat-treatable alloy, its strength is primarily controlled by cold working. Aluminum 1100 is widely used for sheet metal fabrication when ease of forming, corrosion resistance, and lightweight construction are more important than high mechanical strength.

Advantages

Excellent formability, corrosion resistance, and weldability make Aluminum 1100 easy to cut, bend, and fabricate into a wide range of sheet metal shapes. Its low density also helps reduce part weight, while its high thermal and electrical conductivity makes it suitable for applications where heat or electrical conduction is required.

Disadvantages

Aluminum 1100 has relatively low strength compared with many other aluminum alloys, making it less suitable for heavily loaded structural components. Its high formability can also result in easier deformation, denting, or scratching during handling and service, so the material condition and part geometry should be considered when strength and rigidity are important.

Tolerance

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

Recommendation

The combination of lightweight construction, excellent formability, corrosion resistance, thermal and electrical conductivity, and good weldability makes Aluminum 1100 suitable for sheet metal fabricated parts used in electrical, heat-transfer, food-processing, chemical, lighting, and general industrial applications. It is particularly appropriate for parts with relatively low structural loads that require extensive bending or forming.

Material Specifications (For reference only.)	
Tensile strength	34MPa
Modulus of elasticity	69GPa
Elongation at Break	15% to 28%
Hardness	23 HB
Fatigue strength	35MPa
Shear modulus	26MPa

Attention

Aluminum 1100 is a non-heat-treatable alloy, so significant increases in strength cannot be achieved through conventional solution heat treatment and aging. Different tempers can provide different strength and formability characteristics through cold working. When fabricating thin sheet, appropriate bending and forming practices should be used to avoid unnecessary deformation or surface damage. For applications where high strength or rigidity is required, a higher-strength aluminum alloy may need to be considered.

Applications

3DSPRO finds people using Aluminum 1100 to make functional parts and prototypes in the following industries and applications.

Electrical and electronics:

Electrical enclosures, panels, reflectors, conductors, and components requiring good electrical conductivity and lightweight construction.

Heat transfer and HVAC:

Heat exchangers, heat-transfer components, and other fabricated parts where thermal conductivity and corrosion resistance are important.

Food and chemical handling:

Food-handling equipment, containers, trays, and chemical-handling components where corrosion resistance and formability are important.

Lighting and general sheet metal fabrication:

Lighting reflectors, decorative components, panels, covers, and other formed sheet metal parts that benefit from Aluminum 1100's high formability and corrosion resistance.