



TECHNICAL DATA SHEET

PRODUCT: A97039 ALUMINUM ALLOY PLATE

Aluminum 7039 Alloy, also known as UNS A97039, is a popular metal alloy used in various industrial applications. It primarily comprises aluminum, with small amounts of other metals added to enhance its properties. This alloy possesses high strength and excellent corrosion resistance, making it an ideal choice in the aerospace, defense, and automotive industries. The properties of aluminum 7039 make it a popular choice among manufacturers looking for lightweight, durable, and strong materials for various applications. Whether you want to improve your machinery's performance or strengthen your products, aluminum 7039 alloy is worth considering.

PRODUCT BASIC INFORMATION:

Alloy:	7039
Form:	Plate
Temper:	H1= Strain hardened only – H2= Strain hardened and partially annealed – H3= Strain hardened and stabilized – H4= Strain hardened and lacquered or painted. This assumes that thermal affects from the coating process affect the strain hardening; seldom encountered.
Dimension:	Thickness: 6.0mm to 150mm Width: 1,000mm to 2,500mm Length: 3,000mm to 10,000mm
Surface Finish:	Mill Finish
Standard Specification:	A97039 - ASTM B209, ASTM-B-209, EN573, and EN485 international standards
Application:	General Use

CHEMICAL COMPOSITION:

Element		Percentage (%)
Aluminum	(Al)	90.5 - 94
Silicon	(Si)	<= 0.30
Iron	(Fe)	<= 0.40
Copper	(Cu)	<= 0.10
Manganese	(Mn)	0.10 - 0.40
Magnesium	(Mg)	2.3 - 3.3
Chromium	(Cr)	0.15 - 0.25
Zinc	(Zn)	--
Titanium	(Ti)	<= 0.10
Remainder Each		0.05 max
Remainder Total		0.15 max

MECHANICAL PROPERTIES:

Properties	Metric	Imperial
Tensile strength	450 MPa	65300 psi
Tensile Strength, Yield	380 MPa	55100 psi
Elongation	13%	13%
Elastic modulus	26 GPa	3770 ksi
Shear strength	255 MPa	37000psi
Fatigue Strength	180 MPa	26100 psi

PHYSICAL DATA :

Density (20°C):	2,74	g/cc
Melting Point:	482 - 638 °C	
Thermal Expansion	23.4	µm/m-K
Modulus of Elasticity:	69.6	GPa
Thermal conductivity (Temper O):	140	W/mK
Electrical Resistivity (Temper O):	0.00000450	ohm-cm
Conductivity (Temper O):	32-40	%IACS
Magnetic performance:	No	
Color:	Silver	
Odour:	No	

TOLERANCE ON FORMS AND DIMENSIONS :

Thickness Tolerance:	Thickness	Width			
		≤1250mm	>1250~1600mm	>1600~2000mm	>2000~2500mm
	≥ 6~8mm	± 0.35mm	± 0.40mm	± 0.40mm	± 0.50mm
	> 8~10mm	± 0.45mm	± 0.50mm	± 0.50mm	± 0.55mm
	> 10~15mm	± 0.50mm	± 0.60mm	± 0.65mm	± 0.65mm
	> 15~20mm	± 0.60mm	± 0.70mm	± 0.75mm	± 0.80mm
	> 20~30mm	± 0.65mm	± 0.75mm	± 0.85mm	± 0.90mm
	> 30~40mm	± 0.75mm	± 0.85mm	± 1.00mm	± 1.10mm
	> 40~50mm	± 0.90mm	± 1.00mm	± 1.10mm	± 1.20mm
	> 50~60mm	± 1.10mm	± 1.20mm	± 1.40mm	± 1.50mm
	> 60~80mm	± 1.40mm	± 1.50mm	± 1.70mm	± 1.90mm
	> 80~100mm	± 1.70mm	± 1.80mm	± 1.90mm	± 2.10mm
	> 100~150mm	± 2.10mm	± 2.20mm	± 2.50mm	± 2.60mm

Width Tolerance:	Thickness	Width		
		≤ 1000mm	> 1000~2000mm	> 2000~2500mm
	≥ 6~12mm	+ 6mm	+ 7mm	+ 8mm
	> 12~50mm	+ 6mm	+ 7mm	+ 9mm
	> 50~150mm	+ 8mm	+ 8mm	+ 9mm

Length Tolerance:	Thickness	Length			
		≤ 2000mm	> 2000~3000mm	> 3000~4000mm	> 4000
	≥ 6~150mm	+ 7mm	+ 8mm	+ 9mm	+ 10mm

Flatness Tolerance:	Thickness	Total Deviation %		
		On Length	On Width	Partial Deviation
	≥ 6~50mm	≤ 0.2%	≤ 0.4%	≤ 0.3%
	> 50~150mm	≤ 0.2%	≤ 0.2%	By agreement

Lateral Curvature Tolerance:	Width	Lateral Curvature Tolerance for Specified Length			
		≤ 2000mm	> 2000~3000mm	> 3000~5000mm	> 5000mm
	≤1250mm	≤ 4mm	≤ 7mm	≤ 10mm	≤ 0.2% of Specified Length
	>1250~1500mm	≤ 3mm	≤ 6mm	≤ 8mm	
	>1500~2000mm	≤ 3mm	≤ 6mm	≤ 7mm	
	>2000mm	-	≤ 5mm	≤ 6mm	

Squareness Tolerance:	Length	Squareness Tolerance for Specified Width			
		≤ 1000mm	>1000~1500mm	>1500~2000mm	> 2000mm
	≤2000mm	≤ 6mm	≤ 7mm	≤ 8mm	-
	>2000~3000mm	≤ 7mm	≤ 7mm	≤ 9mm	≤ 10mm
	>3000~3500mm	≤ 7mm	≤ 8mm	≤ 10mm	≤ 10mm
	>3500~5000mm	≤ 8mm	≤ 10mm	≤ 10mm	≤ 12mm
	>5000mm	≤ 12mm	≤ 12mm	≤ 15mm	≤ 15mm

OTHER PROPERTIES:

Principal Design Features

Aluminum 7039 is an aluminum alloy that offers high levels of strength and toughness when heat-treated. It also has excellent ease of machining properties, making it ideal for creating parts that require precision and repeatable accuracy. Because of these traits, Aluminum 7039 is commonly used in the aircraft industry for jet engines and landing gear components and increasingly in automotive applications such as brake rotors, suspension attachments and structural elements like reinforcement braces. Beyond these, aluminum 7039 is also used for various industrial purposes such as military vehicles and equipment, oil pipelines, offshore structures and architectural constructions.

Machinability

Aluminum 7039 is machinable with conventional tools but may require some special techniques depending on the application. When machining this alloy, it's important to remember that it has low thermal conductivity, so cooling times need to be increased significantly in order to avoid tool damage or deformation of the workpiece.

Weldability

It has excellent welding performance, elastic resistance and good processing and formability, and is widely used as a gun frame and armor structure.

Heat Treatment	Aluminum 7039 responds well to heat treatment which allows the metal to be hardened for increased strength and durability. It can be heated until it reaches its critical temperature before being cooled quickly using oil or water-quenching methods. This process increases the hardness of the metal by up to 50%.
Hot Working	--
Cold Working	--
Annealing	--
Aging	--
Hardening	--

APPLICATIONS

Typical Applications	7039 aluminum alloy is a medium and high-strength Al-Zn-Mg aluminum alloy developed by the United States. It has excellent welding performance, elastic resistance and good processing and formability, and is widely used as a gun frame and armor structure. 7039 is used for refrigerated containers, cryogenic equipment and storage boxes, fire-fighting pressure equipment, military equipment, armor plates, and missile installations. 7039 aluminum alloy is an aluminum alloy principally containing zinc (3.5–4.5%) as an alloying element. It is heat-treatable wrought aluminum alloy. It is used for making armor suits.
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PACKAGING, HANDING & STORAGE:

Package:	Packed in waterproof Kraft, fastened by steel straps on wood pallets, suitable for handling, loading and unloading from the trunks or containers, suitable for export ocean forwarding.
Handling:	Prevent the goods hurting the people who are moving, loading, unloading, especially pay attention to the rolling and dropping for the coils.
Storage:	Stored in indoor area on plain floor, free away from moisture, water, snow, animal oils and dye wastes, avoid storing with acid or basic chemical goods.

