TECHNICAL DATA SHEET

PRODUCT: A92048 ALUMINUM ALLOY PLATE

The Aluminium 2024 series, offers great advantages when compared to other metals primarily thanks to its light weight combined with excellent mechanical & chemical properties making it one of the most popular aluminium alloys used across different industries today; however, care must always be taken during fabrication & assembly processes since minor changes could result in major performance Degradation overtime thus compromising overall part life expectancy! If properly handled however this amazing material can provide outstanding results!

PRODUCT BASIC INFORMATION:

Alloy:	**2048**	
Form:		Foils, Coils, Rolls, Strip, Checkered Plate, Flats, Circle, Blank, Ring (Flange) etc.
Temper:	--	H34, H24, T4, F, T5, H14, H22, H36, H18, H19, T851 T451, H26, T3, T351, H32, H112, H16, O, T7, H321, T651, T6, H111, H12, H38,
Dimension:	Thickness: Width: Length:	0.2-300 mm
Surface Finish:		polished, Bright, hair line, sand blast, brush, checkered, etching, embossed, etc.
Standard Specification:	UNS A92048 - EN 2048	
Application:	General Use	

CHEMICAL COMPOSITION:

Element		**Percentage (%)**
Aluminum	**(Al)**	92.9 – 95.8
Silicon	**(Si)**	≤ 0.15
Iron	**(Fe)**	≤ 0.20
Copper	**(Cu)**	2.8 – 3.8
Manganese	**(Mn)**	0.20 – 0.60
Magnesium	**(Mg)**	1.2 – 1.8
Chromium	**(Cr)**	--
Zinc	**(Zn)**	≤ 0.25
Titanium	**(Ti)**	≤ 0.10
Remainder Each		0.05 max
Remainder Total		0.15 max

MECHANICAL PROPERTIES:

Properties	Metric	Imperial
Tensile strength	455 MPa	66000 psi
Yield strength	415 MPa	60200 psi
Elongation	8.30%	8.30%
Elastic modulus	70 GPa	10200 ksi
Shear strength	270 MPa	39200 psi
Hardness, Brinell (@load 500 kg; thickness 10.0 mm)	122	122
Hardness, Knoop (converted from Brinell hardness value)	153	153
Hardness, Rockwell A (converted from Brinell hardness value)	47.5	47.5
Hardness, Rockwell B(converted from Brinell hardness value)	76	76
Hardness, Vickers (converted from Brinell hardness value)	139	139

PHYSICAL DATA :

Density (20°C):	2.75	kg/m^3
Melting Point:	520 – 645 °C	
Thermal Expansion (20°C ~100°C):	23.5	µm/m°C
Modulus of Elasticity:	26.0	GPa
Thermal conductivity (Temper O):	159	W/mK
Electrical Resistivity (Temper O):	0.00000400 Ω-cm	T851 Temper
Conductivity (Temper O):	42	%IACS
Magnetic performance:	No	
Color:	Silver	
Odour:	No	

ADVANTAGES:

Aluminum 2048 is widely used in aerospace applications such as aircraft wings and fuselages due to its lightweight characteristics combined with its high strength properties after heat treatment which allows for components to be designed thinner yet still resistant to cyclic loads when compared to other alloys used in the same applications such as 2024 aluminum alloys; this reduces fuel consumption in flight operations resulting in lower operational costs for airlines overtime. Additionally, it can be found in some automotive parts such as suspension arms due to its light weight combined with its corrosion resistance allowing for a longer lifetime than those made out of steel or other alloys without suffering any significant performance degradation over time due to rusting or oxidation process that takes place over time if exposed to water or other environmental elements such as snow salt during winter months.

CORROSION RESISTANCE:

Aluminum 2048 has excellent corrosion resistance when exposed to air or water thanks to its passivation layer formed on the surface by the reaction between oxygen molecules present in the atmosphere and aluminium atoms present on the alloy surface forming protective layers that prevent further oxidation processes even when exposed continuously over long periods.

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	--
Machinability	Thanks again due its low melting point this alloy can be machined relatively easily using conventional techniques however care must be taken during operation especially if working with thin sections where minor changes could result in major performance degradation overtime.
Forming	Aluminum 2017 alloy can be solution annealed at 504°C (940°F) for 3-4h followed by water quenching. Age hardening is performed at room temperature and this produces the T4 temper. Cold working such as
Weldability	Welding operations should only use special welding equipment specially designed for aluminum alloys like TIG/MIG welding machines following specific parameters set by specialized personnel depending on application requirements.

Heat Treatment	This alloy can be cold worked but should be annealed prior to machining operations for best results thanks to its low melting point; it can also be solution treated at elevated temperatures followed by an ageing process for increased strength properties.
Hot Working	--
Cold Working	--
Annealing	--
Aging	--.
Hardening	--

APPLICATIONS

Typical Applications	Aluminum 2048 has a density of 0.098 lbs/in3, making it lightweight compared to other metals but still strong enough for structural applications such as aircraft components or automotive parts due to its high tensile strength and fatigue limit after heat treatment. It also has a melting point range between 1220°F – 1360°F (660°C – 740°C).

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.