TECHNICAL DATA SHEET (TDS)

PRODUCT: 5052 ALUMINUM ALLOY PLATE

Aluminum 5052 is a 5000-series aluminum alloy with higher amount of magnesium content comparing with 5005, and it is one of the higher strength non-heat treatable alloys (Annealed it is stronger than 1100, 3003 and 5005). Alloy 5052 has excellent characteristics with a high fatigue strength it is used for structures which are subject to excessive vibrations. As 5052 also has excellent corrosion resistance, especially in marine atmospheres, and it is therefore commonly used in boats, marine components, fuel and oil tubing.

PRODUCT BASIC INFORMATION:

Alloy:	**5052**	
Form:	Plate	
Temper:	O, H111, H112	
Dimension:	Thickness:	6.0mm to 80mm
	Width:	1,000mm to 2,500mm
	Length:	3,000mm to 10,000mm
Surface Finish:	Mill Finish	
Standard Specification:	GB/T 3880, ASTM B209, EN 485	
Application:	General Use	

CHEMICAL COMPOSITION:

Element		**Percentage (%)**
Aluminum	**(Al)**	Remainder
Silicon	**(Si)**	0.25 max
Iron	**(Fe)**	0.40 max
Copper	**(Cu)**	0.10 max
Manganese	**(Mn)**	0.10 max
Magnesium	**(Mg)**	2.2~2.8
Chromium	**(Cr)**	0.15~0.35
Zinc	**(Zn)**	0.10 max
Titanium	**(Ti)**	-
Remainder Each		0.05 max
Remainder Total		0.15 max

MECHANICAL PROPERTIES:

Temper	Thickness	Ultimate Strength Rm/MPa	Yield Strength Rp0.2/MPa	Elongation Min.%	Bend Radius (90°)
O	≥ 6.0~12.5mm	165~215	≥ 65	≥ 19%	2.0t
H111	≥ 12.5~80mm	165~215	≥ 65	≥ 18%	-
H112	≥ 6.0~12.5mm	≥ 190	≥ 80	≥ 7%	-
	≥ 12.5~40mm	≥ 170	≥ 70	≥ 10%	-
	≥ 40~80mm	≥ 170	≥ 70	≥ 14%	-

PHYSICAL DATA :

Density (20°C):	2,680	kg/m^3
Melting Point:	607°C	
Thermal Expansion (20°C ~100°C):	23.8 $x10^{-6}$	/K
Modulus of Elasticity:	69.3	GPa
Thermal conductivity (Temper O):	130	W·m-1·K-1
Electrical Resistivity (Temper O):	0.049 $x10^{-6}$	Ω .m
Conductivity (Temper O):	35	%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

Width Tolerance:	Thickness	Width		
		≤ 1000mm	> 1000~2000mm	> 2000~2500mm
	≥ 6~12mm	+ 6mm	+ 7mm	+ 8mm
	> 12~50mm	+ 6mm	+ 7mm	+ 9mm
	> 50~80mm	+ 8mm	+ 8mm	+ 9mm

Length Tolerance:	Thickness	Length			
		≤ 2000mm	> 2000~3000mm	> 3000~4000mm	> 4000
	≥ 6~80mm	+ 7mm	+ 8mm	+ 9mm	+ 10mm

Flatness Tolerance:	Thickness	Total Deviation %		
		On Length	On Width	Partial Deviation
	≥ 6~50mm	≤ 0.2%	≤ 0.4%	≤ 0.3%
	> 50~80mm	≤ 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	This is a non-heat treatable alloy that is weldable. It is hardened by cold work. It has good forming characteristics and good corrosion resistance, including resistance to salt water.
Machinability	This alloy has relatively fair machinability. It is easier to machine in the hard temper than as annealed and the quality of finish is better if machined in the hard condition. Oil lubricants should be used for machining, except that very light cuts may be done dry.
Forming	Aolly 5052 is readily formed at room temperature. Successive cold working decreases the formability.
Weldability	This alloy is readily welded by conventional methods. When filler rod is required it should be aluminum alloy 5356 as filler. Either tungsten or consumable electrode inert gas shielded arc welding is preferred method.
Heat Treatment	Alloy 5052 cannot be hardened by means of heat treatment. It does harden due to cold working.
Hot Working	This alloy has excellent cold working characteristics such that hot working should not normally be necessary. However it may be hot worked in the temperature range of 260°C to 510°C.

Cold Working	The alloy cold works readily and may be formed by drawing or spinning. However the amount of cold work imparted by spinning makes intermediate annealing necessary.
Annealing	Annealing, if required, may be done at 345°C, followed by air cooling.
Aging	Not applicable to this alloy.
Hardening	Only cold working will cause hardening (strengthening) of this alloy as it does not harden by heat treatment.

APPLICATIONS

Typical Applications	Alloy 5052 is typically used for: Tread plate, boiler making, containers, nameplates, road signs, architectural paneling, chemical industry, irrigation desalination units, pressure vessels, rivets, hydraulic tubes, kitchen cabinets, small boats, home freezers, milk crates, welded tubes, aircraft tube, fencing, and appliances. It is also commonly used in sheet metal work and in sheet metal parts.

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.

The above mentioned aluminum product is produced according to national standard specifications, and has no poison, no pollution, and no cauterization. It is common industry metal material.

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