TECHNICAL DATA SHEET (TDS)

PRODUCT: 1050 ALUMINUM ALLOY COIL / SHEET

Aluminum alloy 1050 is an aluminum-based alloy in the "commercially pure" wrought family (1000 or 1xxx series). As a wrought alloy, it is not used in castings. Instead, it is usually formed by extrusion or rolling. It is commonly used in the electrical and chemical industries, on account of having high electrical conductivity, corrosion resistance, and workability. 1050 alloy is also sometimes used for the manufacture of heat sinks, since it has a higher thermal conductivity than other alloys. It has low mechanical strength compared to more significantly alloyed metals. It can be strengthened by cold working, but not by heat treatment.

PRODUCT BASIC INFORMATION:

Alloy:	**1050**	
Form:	Sheet, Coil	
Temper:	O, H14, H24, H18	
Dimension:	Thickness:	0.20mm to 6.0mm
	Width:	20.0mm to 2,600mm
	Length:	1,000mm to 4,000mm, or Coil
Surface Finish:	Mill Finish	
Standard Specification:	GB/T 3880	
Application:	General Use	

CHEMICAL COMPOSITION:

Element		**Percentage (%)**
Aluminum	**(Al)**	99.50
Silicon	**(Si)**	0.25 max
Iron	**(Fe)**	0.40 max
Copper	**(Cu)**	0.05 max
Manganese	**(Mn)**	0.05 max
Magnesium	**(Mg)**	0.05 max
Chromium	**(Cr)**	-
Zinc	**(Zn)**	0.10 max
Titanium	**(Ti)**	0.03 max
Remainder Each		0.03 max
Remainder Total		-

MECHANICAL PROPERTIES:

		O	H14	H24	H18
Ultimate Strength Rm/MPa		60~100	95~130	95~130	≥ 130
Yield Strength Rp0.2/MPa		≥ 20	≥ 75	≥ 75	-
Elongation Min. %	≥ 0.2~0.5mm	≥ 15%	≥ 2%	≥ 2%	≥ 1%
	≥ 0.5~0.8mm	≥ 20%	≥ 3%	≥ 3%	≥ 2%
	≥ 0.8~1.5mm	≥ 20%	≥ 4%	≥ 4%	≥ 3%
	≥ 1.5~3.0mm	≥ 28%	≥ 5%	≥ 5%	≥ 4%
	≥ 3.0~6.0mm	≥ 28%	≥ 6%	≥ 6%	-
Bend Radius (90º)	≥ 0.2~0.8mm	0t	0.5t	0.5t	-
	≥ 0.8~6.0mm	0t	1.0t	1.0t	-

PHYSICAL DATA :

Density (20°C):	2,705	kg/m^3
Melting Point:	646°C	
Thermal Expansion (20°C ~100°C):	23.6 x10^{-6}	/K
Modulus of Elasticity:	70	GPa
Thermal conductivity (Temper O):	231	W·m-1·K-1
Electrical Resistivity (Temper O):	0.0281 x10^{-6}	Ω .m
Conductivity (Temper O):	61.3	%IACS
Magnetic performance:	No	
Color:	Silver	
Odour:	No	

TOLERANCE ON FORMS AND DIMENSIONS :

Thickness Tolerance:	**Thickness**	**Width**			
		≤1000mm	>1000~1250mm	>1250~1600mm	>1600~2000mm
	≥ 0.2~0.4mm	± 0.02mm	± 0.04mm	± 0.05mm	-
	> 0.4~0.5mm	± 0.03mm	± 0.04mm	± 0.05mm	± 0.06mm
	> 0.5~0.6mm	± 0.03mm	± 0.05mm	± 0.06mm	± 0.07mm
	> 0.6~0.8mm	± 0.03mm	± 0.06mm	± 0.07mm	± 0.08mm
	> 0.8~1.0mm	± 0.04mm	± 0.06mm	± 0.08mm	± 0.09mm
	> 1.0~1.2mm	± 0.04mm	± 0.07mm	± 0.09mm	± 0.10mm
	> 1.2~1.5mm	± 0.05mm	± 0.09mm	± 0.10mm	± 0.11mm
	> 1.5~1.8mm	± 0.06mm	± 0.10mm	± 0.11mm	± 0.12mm
	> 1.8~2.0mm	± 0.06mm	± 0.11mm	± 0.12mm	± 0.14mm
	> 2.0~3.0mm	± 0.07mm	± 0.12mm	± 0.13mm	± 0.15mm
	> 3.0~4.0mm	± 0.10mm	± 0.15mm	± 0.17mm	± 0.18mm
	> 4.0~6.0mm	± 0.18mm	± 0.22mm	± 0.24mm	± 0.25mm

Width Tolerance:	Thickness	Width				
		≤300mm	>300~500mm	>500~1250mm	>1250~1650mm	>1650mm
	≥ 0.2~0.6mm	+ 0.4mm	+ 0.6mm	+ 1.5mm	+ 2.5mm	+ 3.0mm
	> 0.6~1.0mm	+ 0.5mm	+ 1.0mm	+ 1.5mm	+ 2.5mm	+ 3.0mm
	> 1.0~2.0mm	+ 0.7mm	+ 1.2mm	+ 2.0mm	+ 2.5mm	+ 3.0mm
	> 2.0~3.0mm	+ 1.0mm	+ 1.5mm	+ 2.0mm	+ 2.5mm	+ 4.0mm
	> 3.0~6.0mm	+ 1.5mm	+ 2.0mm	+ 3.0mm	+ 3.0mm	+ 5.0mm

Length Tolerance:	Thickness	Length			
		≤1000mm	>1000~2000mm	>2000~3000mm	>3000mm
	≥ 0.2~3.0mm	+ 3mm	+ 4mm	+ 6mm	+ 8mm
	> 3.0~6.0mm	+ 4mm	+ 6mm	+ 8mm	+ 10mm

Flatness Tolerance:	Thickness	Total Deviation		
		On Length	On Width	Partial Deviation
	≥ 0.2~0.5mm	By agreement	By agreement	By agreement
	> 0.5~3.0mm	≤ 0.4%	≤ 0.5%	≤ 0.5%
	> 3.0~6.0mm	≤ 0.3%	≤ 0.4%	≤ 0.4%

Lateral Curvature Tolerance:	Width	Lateral Curvature for Specified Length			
		≤1000mm	>1000~2000mm	>2000~3500mm	>3500mm
	≤300mm	≤ 2.0mm	≤ 4.0mm	≤ 8.0mm	-
	>300~600mm	≤ 1.5mm	≤ 3.0mm	≤ 5.0mm	-
	>600~1000mm	≤ 1.0mm	≤ 2.0mm	≤ 4.0mm	≤ 5.0mm
	>1000~2000mm	-	≤ 2.0mm	≤ 4.0mm	≤ 5.0mm
	>2000mm	-	-	≤ 4.0mm	≤ 5.0mm

Squareness Tolerance:	Length	Squareness Tolerance for Specified Width			
		≤1000mm	>1000~1500mm	>1500~2000mm	>2000mm
	≤1000mm	≤ 4.0mm	-	-	-
	>1000~2000mm	≤ 4.0mm	≤ 5.0mm	≤ 6.0mm	-
	>2000~3000mm	≤ 5.0mm	≤ 5.0mm	≤ 7.0mm	≤ 8.0mm
	>3000~5000mm	≤ 6.0mm	≤ 8.0mm	≤ 8.0mm	≤ 10.0mm

OTHER PROPERTIES:

Principal Design Features	This is an alloy with excellent corrosion resistance, moderate strength, high ductility and highly reflective finish. It is not heat treatable and develops strengthening from cold working only.
Machinability	This alloy is considered as having poor machinability for the aluminum alloys.
Forming	This alloy is readily formed by either conventional cold working or hot working.

Welding	When welding 1050 to itself or an alloy from the same subgroup the recommended filler wire is 1100. For welding to alloys 5083 and 5086 or alloys from the 7XXX series, the recommend wire is 5356. For other alloys, use 4043 filler wire.
Heat Treatment	A non-heat treatable alloy.
Hot Working	The hot working range (as for forging) is 260°C to 510°C. In that range the alloy is easily hot worked.
Cold Working	This alloy is readily cold worked by all conventional methods.
Annealing	Annealing, during or following cold working, is done at 350°C to 450°C, allowing adequate time for thorough heating, followed by air cooling.
Aging	Not applicable to this alloy.
Hardening	Hardens as a result of cold working only.

APPLICATIONS

Typical Applications	Aluminum 1050 alloy is chiefly used in the following areas: Kitchenware, Packaging, Boiler manufacturing, Heat transfer devices, Automotive industry, Architecture and paneling, General sheet metal work, Food industrial containers, Cable sheathings, Lamp reflectors, Cabinets, vessels, and appliances, Chemical and pharmaceutical industries

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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