



# TECHNICAL DATA SHEET

## PRODUCT: A91100 ALUMINUM ALLOY COIL / SHEET

1100 aluminum alloy is an aluminum-based alloy in the "commercially pure" wrought family (1000 or 1xxx series). With a minimum of 99.0% aluminum, it is the most heavily alloyed of the 1000 series. It is also the mechanically strongest alloy in the series, and is the only 1000-series alloy commonly used in rivets. At the same time, it keeps the benefits of being relatively lightly alloyed (compared to other series), such as high electrical conductivity, thermal conductivity, corrosion resistance, and workability. It can be strengthened by cold working, but not by heat treatment.

### PRODUCT BASIC INFORMATION:

<b>Alloy:</b>	<b>1100</b>
<b>Form:</b>	Sheet, Coil
<b>Temper:</b>	O, H14, H24, H18
<b>Dimension:</b>	Thickness: 0.20mm to 6.0mm Width: 20.0mm to 2,600mm Length: 1,000mm to 4,000mm, or Coil
<b>Surface Finish:</b>	Mill Finish
<b>Standard Specification:</b>	GB/T 3880, ASTM B209
<b>Application:</b>	General Use

### CHEMICAL COMPOSITION:

Element		Percentage (%)
Aluminum	(Al)	99.10 min
Silicon	(Si)	0.95 max (Si+Fe)
Iron	(Fe)	0.95 max (Si+Fe)
Copper	(Cu)	0.05~0.20
Manganese	(Mn)	0.05 max
Magnesium	(Mg)	-
Chromium	(Cr)	-
Zinc	(Zn)	0.10 max
Titanium	(Ti)	-
Remainder Each		0.05 max
Remainder Total		0.15 max

**MECHANICAL PROPERTIES:**

		<b>O</b>	<b>H14</b>	<b>H24</b>	<b>H18</b>
<b>Ultimate Strength Rm/MPa</b>		75~105	110~145	110~145	≥ 150
<b>Yield Strength Rp0.2/MPa</b>		≥ 25	≥ 95	≥ 95	-
<b>Elongation Min. %</b>	≥ 0.2~0.3mm	≥ 15%	≥ 1%	≥ 1%	≥ 1%
	≥ 0.3~0.5mm	≥ 17%	≥ 2%	≥ 2%	≥ 1%
	≥ 0.5~1.5mm	≥ 22%	≥ 3%	≥ 3%	≥ 2%
	≥ 1.5~3.0mm	≥ 30%	≥ 5%	≥ 5%	≥ 4%
	≥ 3.0~6.0mm	≥ 30%	≥ 5%	≥ 5%	-
<b>Bend Radius (90°)</b>	≥ 0.2~6.0mm	0t	0t	0t	-

**PHYSICAL DATA:**

<b>Density (20°C):</b>	2,710	kg/m <sup>3</sup>
<b>Melting Point:</b>	643°C	
<b>Thermal Expansion (20°C ~100°C):</b>	23.6 x10 <sup>-6</sup>	/K
<b>Modulus of Elasticity:</b>	69	GPa
<b>Thermal conductivity (Temper O):</b>	222	W·m <sup>-1</sup> ·K <sup>-1</sup>
<b>Electrical Resistivity (Temper O):</b>	0.0292 x10 <sup>-6</sup>	Ω .m
<b>Conductivity (Temper O):</b>	59	%IACS
<b>Magnetic performance:</b>	No	
<b>Color:</b>	Silver	
<b>Odour:</b>	No	

**TOLERANCE ON FORMS AND DIMENSIONS:**

<b>Thickness Tolerance:</b>	<b>Thickness</b>	<b>Width</b>			
		≤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 alloy is commercially pure aluminum with excellent forming characteristics.

**Machinability** This alloy has very good machinability. Best results are obtained when machining is done with the alloy in hard temper. Carbide tooling is preferred, but high speed steel tooling may also be used. For heavy cuts an oil lubricant should be used otherwise turning may be done dry.

**Forming** Forming is readily accomplished with this alloy. In the annealed condition the alloy can be cold worked extensively without an intermediate anneal.

<b>Weldability</b>	Readily welded by all conventional methods. Use AL 1100 consumable electrodes and filler wire. Gas: Excellent Arc: Excellent Resistance: Excellent
<b>Heat Treatment</b>	A non-heat treatable alloy.
<b>Hot Working</b>	The hot working range (as for forging) is 260°C to 510°C. In that range the alloy is easily hot worked.
<b>Cold Working</b>	This is an ideal alloy for cold working because of the good ductility in the annealed temper. It can be cold formed by bending, drawing or spinning.
<b>Annealing</b>	Annealing, which may be necessary after severe cold working, is done at 350°C for sufficient time to allow for thorough heating and then air cooled.
<b>Aging</b>	Not applicable to this alloy.
<b>Hardening</b>	Hardens as a result of cold working only.

## APPLICATIONS

<b>Typical Applications</b>	Applications requiring good formability and high resistance to corrosion where high strength is not necessary. Food and chemical handling and storage equipment, cooking utensils, sheet metal work, drawn or spun hollowware, fin stock, welded assemblies, heat exchangers, lithe plate, nameplates, light reflectors, decorative parts, giftware and rivets.
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## PACKAGING, HANDING & STORAGE:

<b>Package:</b>	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.
<b>Handling:</b>	Prevent the goods hurting the people who are moving, loading, unloading, especially pay attention to the rolling and dropping for the coils.
<b>Storage:</b>	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.

